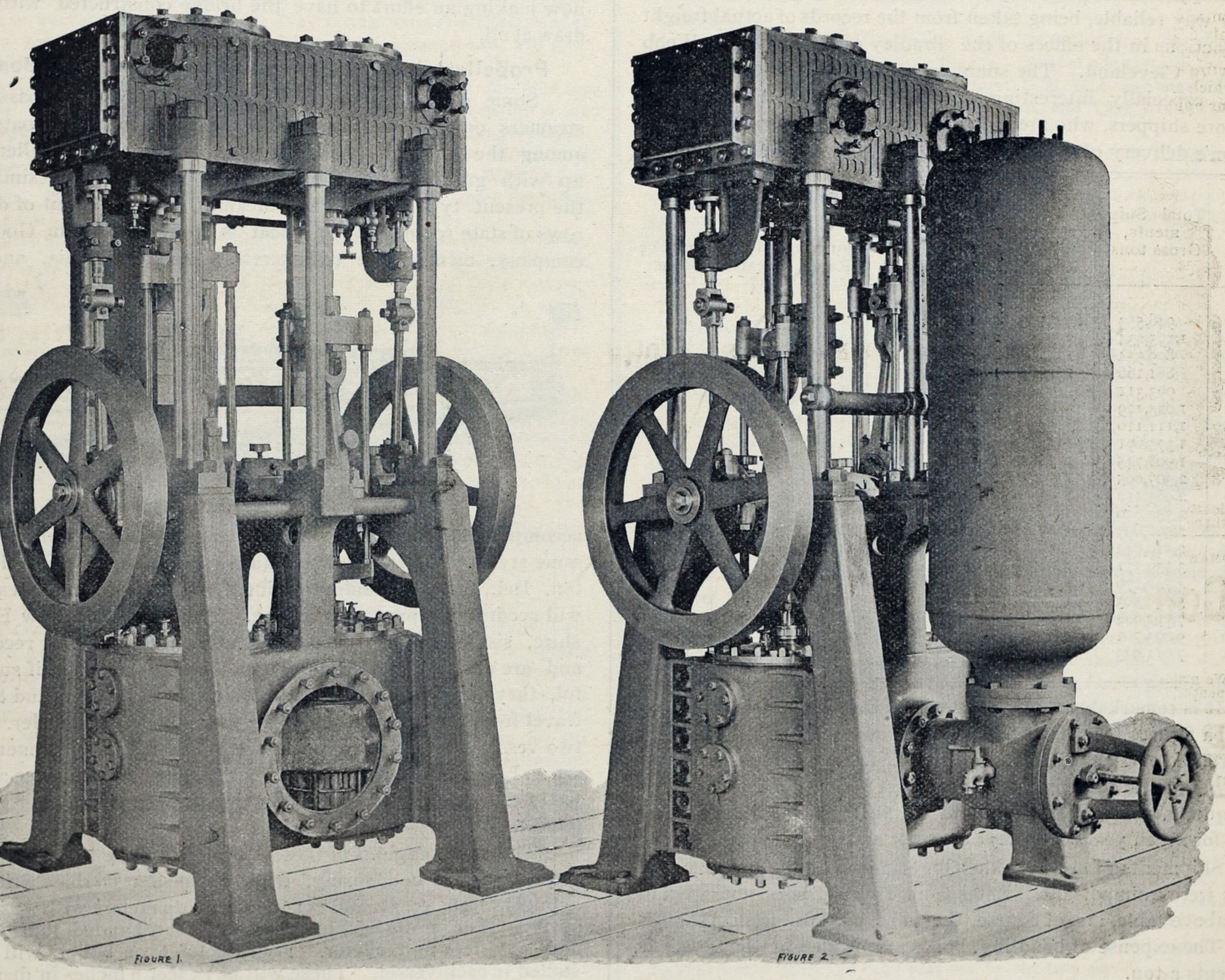
MARINE REVIEW.

VOL. V. CLEVELAND, OHIO, THURSDAY, FEBRUARY 18, 1892. No. 8.

Fire Pumps for a Fire Boat.

The illustration on this page represents the fire pumps in the Cataract, the Baltimore fire-boat. They are vertical, duplex double acting, with crank-shaft and fly wheels, with two steam cylinders 16 inches diameter, and two water cylinders 9 inches diameter, all having 10 inches stroke. A capability of working continuously with steam at 160 pounds up to 220 revolutions per minute against 160 pounds water pressure, is an evidence of the excellent design and workmanship in them. As interesting as anything, however, is the fact that they were built in Cleveland by Thomas Manning & Son, and are similar to the engines in the Cleveland fire-boat. The water cylinders were cast together of composition metal and 7,135 pounds of brass and bronze were used in the pump entire. The Cataract was designed by William Cowles, Cowles Engineering Company, Brooklyn, and is 85 feet long, 20 feet beam, 10 feet deep and draws 7½ feet. The engines are compound 14 and 26 by 16 inches stroke. The exhaust from the fire pumps is turned into the Lightall surface condenser. One difficulty experienced in fire-boats is the inability to secure suffiient steam at required pressure for fire pumps and engines. This has been met in the Cataract by using the Cowles water-tube boilers. There is no trouble in getting steam at 160 pounds pressure from these boilers while the boat is running 9 miles an hour and throwing the big swivel and four side streams at the same time.



FIRE PUMPS FOR A FIRE BOAT.

Roumania Shoal.

Commander Nicoll Ludlow inspector of the ninth light-house district, is making every effort to locate the spot on Lake Michigan north of Squaw island struck by the steamer Roumania, last season when that boat came near foundering on account of injuries received. The obstruction is a very dangerous one, as any of the deep-laden Escanaba ore carriers are liable to run into it while it remains unmarked. Capt. C. Ennis of the steamer Lansing reports to Capt. Geo. P. McKay of the Cleveland Vessel Owners' Association that his boat struck in the same locality during the season of 1890. He says he was at the time about 4½ miles N. ⅛ E. from Squaw island. The chart shows 29 feet of water at this point and it would not be surprising if this is the same shallow place upon which the Roumania brought up. Capt. Ennis says there was considerable sea on when his boat struck.

Deep Water and Low Freight Rates.

Below will be found a table that cannot fail to interest every owner of vessel property on the lakes. It shows the average "wild" rates, or single trip charters, as well as season contract rates on ore from the different upper lake ports for each year from 1872 to 1891 inclusive. The total shipments of ore from all Lake Superior mines are also shown in connection with the freight rates. These figures for single seasons have been published with the close of each season, but it is more than probable that such a summary covering a long period of years—twenty in this case—is now presented for the first time. The idea was suggested by Congressman Vincent A. Taylor of Cleveland, who is desirous of securing this and other data for the purpose of showing the reduction in carrying charges caused by government improvements in the connecting waterways of the lakes and it will be followed by similar statements regarding carrying charges on grain and coal, which have been very carefully recorded and may be readily secured. Some difficulty attended the collection of these statistics as to iron ore, but they are in every way reliable, being taken from the records of actual freight transactions in the offices of the Bradley estate and H. J. Webb & Co. of Cleveland. The summary, which follows, presents a study especially interesting at this time to vessel owners and iron ore shippers, who are engaged in making contracts for next season's delivery of ore:

Year.	Total Shipments, Gross tons.	ESCANABA.		MARQUETTE.		ASHLAND.	
		Wild Rate.	Contr'ct Rate.	Wild Rate.	Contr'ct Rate.	Wild Rate.	Contr'ct Rate.
1872	948,553	$3 33	$2 00	$4 25	$2 80	.....	.....
1873	1,195,234	2 59	2 60	3 53	3 50	.....	.....
1874	809,934	1 36	2 00	1 93	2 75	.....	.....
1875	881,166	1 13	1 40	1 50	1 75	.....	.....
1876	993,311	86	1 20	1 35	1 50	.....	.....
1877	1,025,129	98	1 00	1 41	1 40	.....	.....
1878	1,111,110	81	90	1 22	1 30	.....	.....
1879	1,375,691	1 25	90	1 83	1 40	.....	.....
1880	1,908,745	1 70	1 85	2 26	2 75	.....	.....
1881	2,307,005	1 36	1 75	2 05	2 45	.....	.....
1882	2,965,412	1 04	1 40	1 26	1 75	.....	.....
1883	2,352,840	1 22	1 00	1 40	1 20	.....	.....
1884	2,508,693	87	1 10	1 08	1 35	.....	.....
1885	2,516,642	78	90	98	1 05	1 25	1 15
1886	3,559,371	1 28	1 05	1 51	1 20	1 78	1 20
1887	4,742,276	1 59	1 40	1 87	1 63	2 23	2 00
1888	5,046,503	1 05	90	1 30	1 15	1 43	1 25
1889	7,292,644	1 01	1 00	1 19	1 10	1 34	1 25
1890	9,003,701	89	1 10	1 07	1 25	1 17	1 35
1891	7,011,933	84	65	1 02	90	1 11	1 00

It is remarkable that an average of the Marquette and Escanaba figures for twenty years past shows only an insignificant difference between contract and "wild" rates. The average rates for twenty years are: Escanaba, contract $1.20½, "wild" $1.29½; Marquette, contract $1.71, "wild" $1.70. The Ashland averages for seven years are $1.31 contract and $1.47 "wild."

Shipments of ore from the Gogebic iron range previous to 1885 were unimportant. Rates from Two Harbors, not noted in the above table, are of course, the same as those from Ashland.

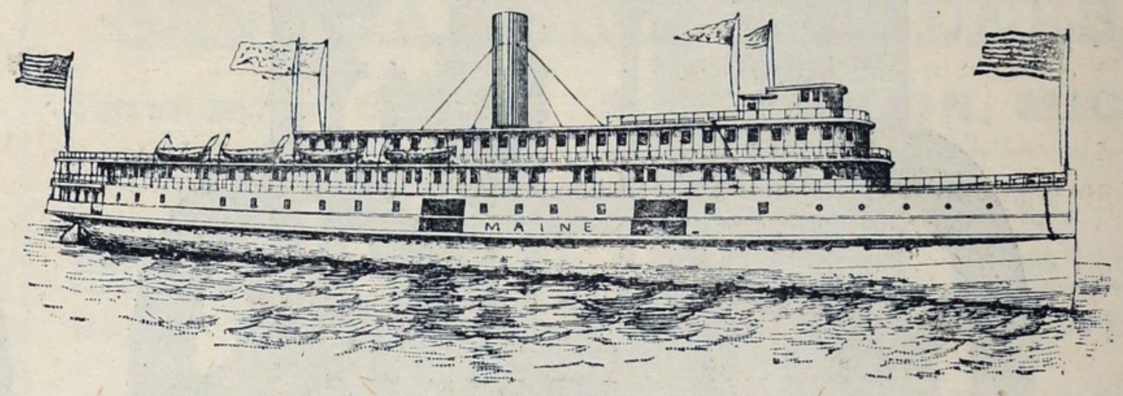
The expense of handling, borne at all times by the vessel, is 21 cents a ton.

Bridges at Duluth and Superior.

Duluth people who are advocating the construction of a bridge across the canal or harbor to Superior and St. Louis bays do not understand the danger of such an obstruction at that point. Every vessel master who has visited the head of the lakes knows that in heavy northeast weather it is a most difficult task to keep a steamer off the piers in making this entry. In a northeast storm this point is exposed to a sweep of sea of 300 miles or more, and there is no anchorage or shelter nearer than the Apostle islands. With the chances of a bridge becoming clogged in severe fall weather, a fleet of vessels trying to make this harbor would certainly be exposed to great danger. Putting aside these conditions, however, there is no good reason for the demand of local interests that an obstruction of any kind should be placed over this channel, and the commission of engineers who are to consider the question at Detroit shortly, will undoubtedly see it in the right light. The narrow strip of land which it is sought to connect, Minnesota point, is worth but little if any more than a single steel steamer of large capacity. The land will doubtless be used eventually for a city park and can be reached by a ferry, and if ever valuable enough can be reached by a tunnel. The claim that Minnesota point is wanted badly for dock frontage will not withstand investigation, as the city is now platted out half a mile or more into the bay and there is 100 miles or more of dock frontage, including slips, with only a little over four miles of it in use. Farther up the St. Louis river another bridge project is under way that will bear attention from the government engineer in charge of the district as well as the commission. According to original plans this bridge was to be 110 feet in the draw, but it is understood that the projectors are now making an effort to have the bridge constructed without a draw at all.

Propellers Instead of Side-Wheel Passenger Boats.

Some of the managers of companies operating passenger steamers on the lakes are considering plans for new boats, and among the different types suggested is that of a propeller built up with guards above the main portion of the hull, similar to the present type of side-wheel steamer, so as to admit of double rows of state rooms. Such a boat is thought of by the Goodrich company, owning the twin-screw steamer Virginia, and the



NEW TYPE OF PASSENGER STEAMER.

accompanying engraving of the steamer Maine, built after the same style by the Harlan & Hollingsworth Company of Wilmington, Del., for the Stonington line, Long Island sound steamers, will accordingly prove interesting. The Maine and New Hampshire, sister-ships of this pattern, were both launched recently, and are exciting much interest, as it is expected that if successful, they will bring about a revolution in Long Island Sound travel from the side-wheeler to the more modern propeller. The two vessels are exactly alike in every detail. Their dimensions are: Length on water line 302 feet 7 inches; length over all 310 feet; beam molded on load water line 44 feet; width over guards 60 feet; draft 12½ feet.

The main engines of these steamers will be inverted, direct acting, surface condensing, triple expansion engines with four cylinders, 28, 45, 51 and 51 inches in diameter, with 42 inches stroke. The propeller is of cast iron, left-handed, four-bladed, and 13½ feet in diameter. Four Scotch type boilers will be installed in each vessel. These will be 13 feet 6 inches in diameter and 11 feet 6 inches long. Each boiler has three corrugated furnaces 46 inches outside diameter, comprising 274 feet of grate surface. The boilers will be worked at a pressure of 160 pounds to the square inch. The engraving is from the Railway Review, Chicago.

Pig Iron Production is Still Heavy.

Stocks of pig iron are increasing and prices are lower than they were three weeks ago. On the first of the year there were 310 furnaces in blast with a weekly production of 191,442 tons. Feb. 1 the number of furnaces blowing was 305, but the weekly production was 193,007 tons, that is with five less furnaces in blast. The average weekly production on Dec. 1, was 193,009 tons.

CHICAGO LAKE INTERESTS.

WESTERN OFFICE, MARINE REVIEW,
No. 210 So. Water Street, CHICAGO, Ill., Feb. 18.

The Excelsior Marine Benevolent Association has passed resolutions in favor of a new revenue cutter in place of the old-time Andy Johnson. Petitions to Congress to the same end have been circulated and generally signed. The board of trade has been active in the same course. Collector Clark is hopeful that Congress will give the new cutter and also an additional appropriation for the new boarding cutter at Chicago harbor. At the Naval display commemorative of the Grant monument anniversary last October, the absurdity of the government vessels on the lakes compared with the merchant marine was most marked. Here was the ancient metal-tub Michigan alongside the steamer Hudson, and the steamer Tuscarora got in the range of the Johnson. It seemed possible forthe big and powerful merchant steamers to run clear through the United States vessels without a scratch. The Michigan and Johnson were the most antiquated and frail of all the craft in the display. Their commanders did wisely in staying in port when the wind blew. The general government would be better represented by no boats at all than these back number craft

The new Graham & Morton steamer, building at Detroit, will be out June 1. She will be the winter boat of the line between Chicago and St. Joe. Last fall the line attempted to charter a suitable steamer for its winter business, but was unable to secure one. Hereafter, it will have a boat of its own for that hazardous traffic. The line will consist of three steamers next season. The Puritan is receiving extensive alterations at Benton Harbor. Grant I. Whitslar, formerly of Youngstown, will have charge of the line's Chicago business next season.

Capt. Armstrong of Bay City is in town looking over the field for Worlds' Fair business. He says a private pier will be erected next the exposition grounds, and that the boats will land their passengers there. If Capt. Armstrong succeeds in getting a suitable pier, he will make it warm for any company which gets exclusive privileges at the World's Fair grounds. There is a good location north of the grounds which doubtless could be utilized for that purpose.

Canal street bridge is still there. United States District Attorney Milchrist promised the marine interest that he would begin proceedings against the city of Chicago last December, but he has done nothing. By and by the marine interests will begin stirring up the question again, and then it will be surprising how soon it is possible to bring that suit. All the law in the land, without a stick to see that it is enforced, would not move a straw. The stick is the business.

The Chicago Towing Company has been sued for $5,000 on account of the death of the fireman on the tug Parker, when she exploded. The main ground for the suit will be negligence in using the water of the South fork for making steam. With marine people for jurors, of course no verdict for damages could be obtained, but with people who know nothing of river business, the result of the case will be doubtful. If it were not for the supreme court to set aside these verdicts, towing companies would be bankrupted.

Escanaba Charters at 95 Cents.

Special Correspondence to the MARINE REVIEW.

MILWAUKEE, Wis., Feb. 18.—During the early winter months Milwaukee vessel owners did not let the matter of freights for the coming season trouble them much. An awakening is now perceptible, however, and from this time out they may bestir themselves. The ice was broken last week when the total output of the Pewabic iron mine, which will reach anywhere from 75,000 to 125,000 gross tons, was taken for the steamers Helena, Veronica, Marion and towbarge Helena, (Amboy,the latter is expected to be named) at 95 cents per ton. The Pewabic mine is owned by Milwaukee capitalists, hence the dicker was made at home. The ore product has already been sold. Shipments are to be made from Escanaba to Lake Erie ports. The Grand Haven fleet consisting of the steamers Ionia, Mary E. Boyce and towbarge Mary A. McGregor, will deliver 100,000 tons of ore to the Iroquois furnace at South Chicago from Escanaba. The rate is not mentioned, but as the Illinois Steel Company last season paid 50 cents, free of handling, and as this contract is of similar character, although the ore dock is situated farther up the Calumet river, 55 or 60 cents may be the possible figures.

The details of the new palace steamer for the Goodrich line are occupying much of the time and attention of President Goodrich. Traffic Manager Hurson thinks everything will be arranged so that bids can be solicited during the month of April or early in May. Whether the work shall be done at Wyandotte, Cleveland or South Chicago, will depend upon the figures submitted. The size of the steamer is the only matter that has been decided thus far. She will have a keel length of 300 feet, and a length over all of about 322 feet, a depth of 26 feet and 44 feet extreme beam. This will make her 45 feet longer and 6 feet wider than the Virginia. The extra beam will enable the introduction of two tiers of staterooms without resorting to the arcade plan of the Detroit and Cleveland line steamers or infringing upon the width of the saloon. Builders claim also that the beam will not prevent them from attaining fine lines for speed, and the intention is to have the new boat fully as fast as the Virginia, whose actual speed capacity has not been fully tested but undoubtedly will be the coming season.

Nels. A. Peterson, captain of the local life-saving station, has brought suit against the owners of the steamer Helena to recover damages in the sum of $10,000 as the result of a serious scalding received on May 21, 1891. The Helena was lying opposite the life-saving station and Capt. Peterson, in company with Capt. William Lund of the steamer George H. Dyer, left the dock in a small boat to pass around her stern when a jet of hot water and steam was ejected from the discharge pipe inflicting injuries upon Peterson which laid him up until about two months ago, but only slightly injured Lund. The case will be tried shortly.

Sales of vessel property recorded at the Milwaukee customs office during the past week were as follows: Schooner Quickstep, Newcomb McGraft of Muskegon, to the M. Hilty Lumber Company of Milwaukee, the whole $7,000; schooner John L. Green, N. P. Petersen to Erasmus and Gustav Johnson of Sheboygan, one-half, $600; schooner Charles E. Wyman, John D. Wanvig to Christen Christensen of Milwaukee, one-half, $1; schooner R. P. Mason, D. W. Chipman and Michael Anderson of Milwaukee, to Charles Reis, Rudolph Reiboldt, Gustav Huerth and Peter Reis of Sheboygan, the whole, $2,950; tug Liberty, John V. Frisk to C. R. Thayer and John Johnson of Sturgeon Bay, one-third, $733; tug Annie D., Ed Scofield of Oconto, to the Marinette Sawmill Company,and the Marinette Sawmill Company to the Marinette Lumber Company of Marinette, the whole, $2,000

William Marshall will succeed Capt. John Crawford as master of Mann Brothers' lake tug Temple Emery. Recent additions to the membership of Milwaukee lodge Shipmasters' E. M. B. A. are Captains Jere Sullivan and Andrew Wanvig of Milwaukee, and Capt. Frank Derity of Hammond, N. Y. master of the steamer Osceola.

The Chicago Dry Dock Company's property will soon change hands and be converted to other uses. An agent paid $4,000 for an option on the premises and the deal will soon be closed. The dry dock company paid $40,0000 for the property and will receive $80,000 therefore. This will leave a clear field for the Miller Brothers at Chicago.

Still Opposed to the Revenue Marine.

Special Correspondence to the MARINE REVIEW.

WASHINGTON, D. C., Feb. 18—The recent statement published in the REVIEW, as a rumor in Washington, to the effect that Senator Sherman, who headed the opposition last year to the transfer of the revenue marine from the treasury to the navy department, made certain pledges to the lake citizens of Ohio, who aided him in his recent election to the Senate, not to make any out-spoken opposition when the bill came up again, is strenuously denied by him. Senator Sherman, a few days ago, said to the correspondent of the REVIEW: "I never made such a pledge, nor do I recall any request to do so. My opposition to the transfer of the revenue marine from the treasury department to the navy department, was purely on public grounds, and I have seen no reason for changing my opinion."

The fight over the proposition to make the transfer is again on, and is being waged with unusual vigor. The naval officers have employed Mr. Linden Kent of this city to fight the bill, and in this capacity, with the sanction of the secretary of navy, he recently argued against the transfer before the Senate naval committee. He said that the bill would increase the pay of officers in the service $121,000 a year. One of the objections officers of the navy had to it was that it transferred to the navy 207 officers who had never passed an examination. The bill would increase the pay of the revenue marine officers and put them on practically the same footing with naval officers who had passed examinations. Counsel held that the bill prohibited revenue marine officers from performing any military service and limited their service in terms to the performance of civil work. This would make a privileged class of the officers who are transferred, and the secretary would be prohibited from placing them under the command of or in a subordinate position to any officer of the navy. Senator Gray, the champion of the bill in the senate, was present during the argument, and at the conclusion made a short statement explaining the salient features of the measure and the great benefits that would accrue to both services by the transfer.

Plain Talk From Mr. Bates.

EDITOR MARINE REVIEW: I regret to see from the letter of your Chicago correspondent that any of my friends in that city think possibly I have had what is called a "row" with Secretary Foster. I have not passed a word with him on the subject that he has chosen to serve as a cause for my removal, and am not informed from any official source "what is the matter." I judge of this the best I can. When good reasons exist for the removal of an officer they are always assigned, but when no reason at all exists, and the action of the appointing power is arbitrary and tyrannical, as in my case, mum is the word. My trouble is being too American. A foreign nod has great power at Washington. Foreign shipping is in the saddle here, and that accounts for Bates' "row."

WILLIAM W. BATES.

More Than 64 Per Cent. of the Business Out of Chicago.

As against the combined work of nine of the leading lines of railway in this country, lake vessels took out of Chicago during the seven months of navigation last season 63.4 per cent. of all east-bound shipments from Chicago within that period. The total shipments of freight of all kinds, east-bound from Chicago, May to November inclusive, according to the weekly reports of the Chicago board of trade, was 4,265,934, tons and of this the lakes carried 2,705,084 tons and the railways 1,560,850 tons. The railways engaged in this east-bound traffic were the Grand Trunk, Michigan Central, Lake Shore, Pittsburgh, Fort Wayne & Chicago, Pan Handle, Erie, Baltimore & Ohio, Wabash and Nickel Plate. Following is the lake and rail movement by weeks for the season:

Week ending	Lake shipments.	Rail shipments.
May 9	81,821	57,506
" 16	73,696	48,963
" 23	64,541	40,108
" 29	75,801	34,480
June 4	87,233	42,607
" 11	88,616	44,140
" 18	72,624	39,086
" 25	60,408	44,330
" 30	34,669	31,001
July 9	84,735	53,900
" 16	79,452	43,629
" 23	78,598	46,848
" 30	85,718	45,107
Aug. 6	111,872	46,903
" 13	131,243	44,800
" 20	113,680	43,663
" 27	119,191	52,643
Sept. 5	102,126	55,400
" 12	137,743	59,300
" 19	114,163	56,974
" 26	148,175	56,878
Oct. 3	139,467	58,446
" 10	87,438	60,170
" 17	82,258	58,181
" 24	66,568	58,640
" 31	74,596	59,518
Nov. 7	76,500	59,207
" 14	88,460	68,311
" 21	86,988	76,933
" 28	56,804	73,178
Total	2,705,084	1,560,850

The lake movement does not include an aggregate of about 5,000,000 bushels, or 150,000 tons, of grain loaded into vessels during the winter of 1890-91 and taken out by the fleet leaving Chicago with the opening of navigation last spring, which if added would still further increase the gain in water transportation.

It is impossible to secure similar figures regarding the movement of grain and other freight eastward from the head of Lake Superior, but it is certain that the comparison in this regard would be even more favorable to cheap rates by water.

Contract Freight Matters.

The announcement from Milwaukee this week that the steamers Helena and Veronica and other boats of the Milwaukee Tug Boat line have been chartered to carry 125,000 tons of ore from Escanaba to Ohio port at 95 cents a ton was a surprise to both vessel owners and shippers in Cleveland. That the transaction has been consumated, however, there is no doubt, as the mine, the Pewabic, is controlled in Milwaukee, and the Cleveland sales agents of the company say that freight matters are settled at headquarters. Last year's product of this mine was also carried by the Milwaukee Tug Boat Company. This is the first break from the demand of vessel owners for $1 a ton from Escanaba, but it is not likely to cause activity in charters for the present. The condition of the pig iron market is even worse than it has been for some time past, and ore to be delivered next season is not selling, for the reason that prices sufficiently in advance of last year to meet the increased lake freight charges can not be secured. Iron ore dealers still feel that the pig iron market, which has been so long depressed, must improve, and they are accordingly awaiting developments. Sales of ore, all told, for this year will probably foot up 3,750,000 or 4,000,000 tons. Probably 2,500,000 tons of this was disposed of early to the steel makers and covered by the freight of $1.25 from the head of Lake Superior. The balance, which is Bessemer ore going to some of the furnaces, is distributed largely among ore companies controlling vessel property.

Grain stocks in both Chicago and Duluth have been very slow in increasing, and this has also helped to cause some anxiety among vessel owners who had expected to see the elevators taxed to their full capacity by this time. It is noticable also that the aggregate of corn in store at Chicago is very small, and elevator supplies of that cereal have shown a steady decrease.

Within the past few days indications of a possible revival in grain have appeared. Receipts at both Chicago and Duluth show a slight increase, and Duluth has been offering 4 cents for vessels to arrive in the spring. An occasional cargo is offered at Chicago for storage and delivery at Buffalo with the opening. Inactivity in corn shipments is attributed to the claim that the weather has not been cold enough in the west to cause corn to grade rightly for storage.

Grain in Store at Chicago and Duluth.

Duluth and Chicago elevators are not filling up as rapidly as it was expected they would. Following is a statement of stocks of wheat:

	Chicago.	Duluth.
In store	9,348,725 bu.	8,000,685 bu.
Afloat	494,220 bu.	400,703 bu.
Increase last week	65,799 bu.	446,457 bu.
Excess over same time last year	2,771,909 bu.	4,227,918 bu.

Stocks of corn in store at Chicago aggregate 1,073,339 bushels, against 234,197 bushels on the same date in 1891. Stocks of corn have, however, decreased 29,687 bushels during the week. There is also 301,109 bushels of corn afloat in Chicago. Stocks of oats in Chicago foot up 779,920 bushels, against 375,907 bushels on the same date in 1891.

The Wadena is Over the Ocean.

Col. Garretson, who has managed the long voyage of the steam yacht Wadena, built by the Cleveland Ship Building Company, received a letter from the captain noting the arrival of the yacht at St. Vincent, Cape de Verd islands, coast of Africa, adding that as they were in communication with Mr. Wade, who has met the yacht at Cadiz, Spain, by this time, they would discontinue reporting to Cleveland. It was a remarkable voyage; from Cleveland to the mouth of the St. Lawrence gulf about 1,200 miles, 700 miles to New York, 1,400 miles to the Barbadoes, leaving the port of St. Thomas Jan. 27, and 3,000 miles thence to Cape de Verde islands where the yacht arrived Feb. 11. The distance from St. Vincent to Cadiz is about 500 miles, making the total of this voyage, about 7,000 miles, over a fourth of the circumference of the earth. A continuous run of 1,900 miles was made between the Barbadoes and St. Vincent, at a speed of about 12 miles an hour and fuel consumption of 8 tons every 24 hours. Part of this long run was through a heavy sea, in which she behaved very nicely. All on board were reported well, when the yacht was leaving St. Vincent.

The Globe Iron Works Company of Cleveland and the Uuion Dry Dock Company of Buffalo, have awarded the contracts of placing the electric lighting plants on the Anchor line steamers in process of construction at their yards to the Fisher Electric Company of Detroit. The plants to embody all the latest improvements of the Fisher company, the dynamo being driven by the Rice engine. Automatic signals and head lights will be furnished and the general system of lighting arranged for package freight work.

Iron Mining.

VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St. Cleveland, O.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company	$100 00	$.....	$ 80 00
Champion Iron Company	25 00	.....	70 00
Chandler Iron Company	25 00	48 00	50 00
Jackson Iron Company	25 00	.....	100 00
Lake Superior Iron Company	25 00	.....	*55 00
Minnesota Iron Company	100 00	80 00	82 00
Pittsburg Lake Angeline Iron Co	25 00	150 00	.....
Republic Iron Company	25 00	23 50	25 00
Ashland	25 00	.....	.....
Section Thirty-three	25 00	.....	8 00
Brotherton	25 00	2 50	3 00

* Ex. rights.

Trade in mining stocks is again dull in sympathy with the depressed condition of the pig iron market and the ore dealers are unable to sell their product at prices enough in advance of those of last year to cover the increase in lake freights. No new dividends are announced but it can be said on the authority of the Cleveland representatives of the Chandler mine that that company will continue dividends of $1 a share every sixty days during the coming year. This will prove a welcome announcement to some of the smaller holders of Chandler stock who have been wondering as to the intention of the management of this company regarding its surplus. The Chandler will make half a million dollars this year. The new mining properties being developed in Minnesota are yet surrounded by a great deal of uncertainty, and it is not probable that the new range will be brought into prominence as soon as the Gogebic range was a few years ago, on account of the great reduction in the cost of mining at older mines, but all information regarding the building of railways, extent of ore deposit, etc., is sought by investors with a great deal of interest, especially since it is known that the Minnesota company is giving attention to the new finds. Cleveland parties whose influence is sought in this development work are informed that a representative of the Carnegies, who recently spent some time investigating the work done in one township on the Mesaba reports the ore a good Bessemer, running 62 to 64 per cent in iron, with the township capable of producing 1,500,000 tons of ore.

There is now no doubt that the plans of the Duluth & Iron Range Railway, owning the ore docks at Two Harbors, for increased equipment as well as additional dock space are prompted largely by the prospects of ore to come from the new Mesaba range during next season. The Minnesota Iron Company owns some property on the new range, and the railway company, being already equipped with docks, is seeking business in advance of the two new corporations that are building into the range. With two new town sites and work under way on two railways the new ore properties are attracting a great deal of attention. H. V. Winchell, assistant state geologist of Minnesota, says the district presents the greatest iron ore bearing range in the country. It is 25 miles nearer Duluth than the Vermillion range. The right of way for the Duluth, Mesaba & Northern, one of the new railway companies, has been cut as far as the Mountain mine. The ore occurs in beds having a dip of 12 to 40 degrees with the horizon. Little water is encountered. The quality of the ore does not equal that of the Vermillion, but it is thought the difference in cost of securing it will counterbalance the difference in purity. It is said to contain 60 per cent. metallic iron and is low in phosphorus.

After a struggle of several weeks against an unusual flood of water the Ludington mine management has closed the mine and there is no telling when it will again be in operation. The company's old mine will be wrought but will give employment to only about forty men. F. A. Brown, secretary and treasurer of the company, succeeds Mr. Bankes as superintendent.

Send 20 cents in stamps for Tabulated Statement showing Lake Superior ore production for 1891, and the past 36 years.

Coal and Grain Freight Rates.

Freight charges on iron ore from upper lake ports to Ohio ports for twenty years past are given on another page. Capt. James Stone of Cleveland, who is preparing for Congressman Vincent A. Taylor statistics showing reductions in carrying charges caused by government improvements of lake channels, presents also the following figures on coal and grain:

SOFT COAL, OHIO PORTS TO PORTS NAMED.

Year.	Chicago.	Milwaukee.	Escanaba.	Duluth.
1885	$ .67	$ .63	$ .51	$ .49
1886	.89	.83	.60	.78
1887	1.11	1.06	.72	.89
1888	.92	.84	.61	.66
1889	.59	.54	.49	.52
1890	.66	.64	.45	.49
1891	.58	.61	.52	.49
Average, seven years...	.77	.74	.56	.62

HARD COAL, BUFFALO TO PORTS NAMED.

Year.	Chicago.	Duluth.
1885	$ .71	$ .52
1886	.87	.62
1887	1.05	.70
1888	.86	.65
1889	.52	.41
1890	.62	.43
1891	.56	.29
Average, seven years	.74	.52

Coal is shipped net tons and handled in all cases without charge to the vessel.

GRAIN, CHICAGO TO BUFFALO.

Year.	Wheat.	Year.	Wheat.
1877	3.7 cents.	1886	3.6 cents.
1878	3.1 "	1887	4.1 "
1879	4.7 "	1888	2.7 "
1880	5.7 "	1889	2.5 "
1881	3.2 "	1890	1.9 "
1882	2 5 "	1891	2.5 "
1883	3.5 "		
1884	2.1 "	Average, fifteen years	3.2 cents.
1885	2. "		

The handling charge on grain borne by the vessel is $3.50 to $4.00 per 1,000 bushels.

Lengthening the Spokane.

The steamer Spokane will be pulled apart Friday or Saturpay in the Ship Owners' dry dock No. 1. It is safe to say that few persons understand how sixty feet of space is to be made between the forward and after end of the steamer to undergo the operation of lengthening. The rivets have all been removed at a point amidships, so that nothing holds the boat together, but consider that the forward end weighs about 700 tons. This 700-ton half rests on greased ways similar to those prepared for end launches. Nine inch rope will be rove through blocks attached to both sides and the ropes will be run to two capstans, each of which will be turned by two teams. The after end will not be moved. The Spokane went into the dock 249 feet 5 inches long and when the Cleveland Ship Building Company has finished their work she will come out 309 feet 5 inches long, which will, with her 39 foot beam, give her proportions of the latest and most successful carriers.

The Spokane was the first steel boat built on the lakes, the Onoko being the first iron boat. Mentioning iron and steel boats, brings up the fact that the designs, scantlings and dimensions of the Spokane were figured for iron, and then Capt. Thomas Wilson asked the Globe Ship Building Company to say how much they would add to the contract price to build the boat of steel. The additional cost was something like $10,000, but anyhow it was satisfactory. As a result the Spokane was 20 per cent. stronger than if she had been designed for a steel boat, and consequently she will be as strong, or stronger, after she is lengthened than most steel steamers built since. Strange to say it is expected that the additional sixty feet will make little or no change in her speed, while it will increase her carrying capacity 750 tons.

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

JOHN M. MULROONEY, ... } PROPRIETORS.
F. M. BARTON, ... }

HOMER J. CARR, - - - Associate Editor and Manager Chicago Office, 210 South Water Street.

Published every Thursday at No. 510 Perry-Payne Building, Cleveland, O.

SUBSCRIPTION—$2.00 per year in advance. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department contain the names of 3,510 vessels, measuring 1,063,063.90 tons in the lake trade. In classification of this fleet the lakes have more steamboats of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The classification is as follows:

Class.	Number.	Tonnage.
Steam vessels	1,527	652,922.25
Sailing vessels	1,272	328,655.96
Canal boats	657	67,574.90
Barges	54	13,910.09
Total	3,510	1,063,063.90

According to the report of William W. Bates, United States commissioner of navigation, 46 per cent. of the new tonnage of the country was built on the lakes during 1889. This is a percentage greater than the work of the Atlantic coast and western rivers combined, and almost equal to the whole work on the Atlantic and Pacific coast. In 1890 the tonnage built on the lakes is but very little less than that built on the Atlantic and Gulf coasts. Tonnage built on the lakes during the past five years was as follows:

	No. of boats.	Net Tonnage.
1886	85	20,400.54
1887	152	56,488.32
1888	222	101,102.87
1889	225	107,080.30
1890	218	108,515.00
Total	902	393,597.03

St. Mary's Falls and Suez canal traffic: Number of boats through St. Mary's Falls canal in 1890, 234 days of navigation, 10,557; tonnage, net registered, 8,454,435. Number of boats through Suez canal during 1890, full year, 3,389; tonnage, net registered, 6,890,014.

Entered at Cleveland Post Office as Second-class Mail Matter.

IT is said in connection with the announcement of the annual meeting of the Lake Carriers' Association, on the 3rd of next month, that the annual address of President S. D. Caldwell will recommend that committees, appointed from the board of managers for the several branches of legislative work, be made up with regard to the special interests of different classes of vessel owners, and that the meetings of these committees be held in different cities around the lakes. This is one step toward having the affairs of the association directed in part by vessel owners outside of the Buffalo line boat managers, and to be plain about it, leaders in the association have probably reached the conclusion that something of this kind must be done. While it is true that this association has accomplished a great deal of good, and has an able and most active secretary in Mr. C. H. Keep, still its leaders have failed to attract the full support of lake interests and its meetings have not been what they should be. Chief among the causes to which a luke-warm interest in the association is attributed is the claim that, on account of its Buffalo leadership, the organization lacks the proper spirit in lake measures before Congress; that its railway affiliations are not for the best interests of the vessel owner, and that a line carrying projectile law, having special bearing upon a few passenger boats in the Buffalo-Lake Superior trade has been found to demand more attention than a broad measure proposing an appropriation of two or three millions for the improvement of connecting waterways of the lakes. This feeling against the association was increased on account of its attitude in the recent Detroit waterways convention against any move toward an outlet from the lakes to the seaboard, and in Cleveland, at least, a few owners, whose control of vessel property is quite large, have been heard to express an intention of withdrawing from the association. This should not, however, be the course followed. The usefulness of this general body is admitted, and its secretary, Mr. Keep, has within the past year proved a most valuable worker in the advancement of Congressional measures of the highest importance. If the Lake Carriers' Association, as at present constituted, tends too much to railway influences, or has other faults that can be remedied, let the vessel owners outside of Buffalo attend the coming meeting and all meetings in the future with a view to remedying disadvantages in the organization. They can better afford to do this than take a backward step in the movement for deep water navigation.

As far as can be learned from press dispatches, the Canadian commissioners who visited Washington last week with a view of bringing about reciprocity in trade relations between the Dominion and the United States, have returned to Ottowa without a conclusion of any kind on the subject. Lake vessel owners who were specially interested in the question of Welland and St. Lawrence canal tolls which, it was thought, would be taken up at this conference, will be disappointed at the unsatisfactory conclusion of the meeting, but they can now insist on a measure of retaliation that will be more forcible than any conclusion that might be reached by the commissioners. Justice to American ports, or American consumers of grain, demands that the same tolls now collected at the Welland canal on grain bound to American ports be collected at the St. Clair canal on grain bound to Montreal. A late report on this important subject is presented by United States Consul-General Richard G. Lay at Ottowa, in Consular Report No. 130, page 420. The consul-general's report is made in compliance with instructions from the state department, and it shows very clearly the canal discrimination which causes grain trans-shipped at American ports to pay 18 cents a ton more canal tolls than if trans-shipped at a Canadian port. In seeking an expression from the Canadian authorities on the subject, the consul-general experienced the same tendency to evasion that has all along characterized Canadian utterances regarding this matter.

IT is expected that the two new Cunard line steamers building at Govan, Scotland, with triple expansion engines of at least 50 per cent. more indicated horse power than the Teutonic and Majestic, will attain a speed of 22 to 22½ knots an hour, which will mean a minimum passage of about 5 days and 4 hours across the Atlantic. In 1878 the Britannic to make the passage in 7 days and 11 hours indicated 5,100 horse power and consumed 100 tons of coal a day. Either of these new boats in making the same passage in 5 days and 4 hours will indicate 26,000 horse power and will consume 410 tons of coal a day. It will be seen that to gain 2¼ days on the passage it is necessary to multiply the horsepower by 5 and the daily consumption of coal by 4, notwithstanding that at least 25 per cent. more efficiency is gained from the fuel by the adoption of triple engines.

Some out of town callers at the MARINE REVIEW office during the past few days: Col. William Ludlow, Detroit; Edward Gaskin, Buffalo; Gurdon Corning, Saginaw; Frank E. Fisher, Detroit; S. V. Gilbert, Duluth; Amasa Fitch and J. S. Gadsden, Chicago; W. A. Farr, Onekama, Mich.; Byron Whitaker and C. H. Westcott, Detroit; Mr. Keller of Drewery & Keller, Buffalo.

Mariposa is the name given to the big steel steamer building for the Minnesota Steamship Company at the yard of the Globe Iron Works Company, Cleveland. The sister ship building at Chicago will be named Maritana. The two light-house tenders for coast service building at the Globe yard are named Columbine and Lilac, while the Anchor line steamer will be called Schuylkill, and the boat building for Samuel Mitchell of Negaunee, and stockholders in the Cleveland Rolling Mill Company, takes the name of her managing owner.

Send 75 cents to the MARINE REVIEW for a Binder that will hold 52 numbers.

Quaint French Documents.

[BY J. W. WALTON.]

In the year 1716 Louis, king of France, lightened the burdens of navigation by abolishing a grievous passport system, or at least confining its operation to a limited portion of the earth's surface. On March 4 in that same year he issued new and elaborate regulations in regard to clearances. In substance they were:

1. No vessel shall leave one of his majesty's ports without a clearance from the admiral of France, under penalty of confiscation of both vessel and cargo, except it be to sail to her home port when the latter is in the same local jurisdiction where she unloaded. The clerks shall have two forms, one for domestic, the other for foreign clearances.

2. No clearance shall be given to a vessel not actually in port, unless it be to a vessel bought or built in a foreign country, in which case the papers shall be made out for three months only, and none others shall be given her unless during that time she be brought into the kingdom. In such a case the master or owner or correspondent to whom such a temporary document shall be sent, shall enter into an undertaking with the admirality for the return of said vessel into one of the ports of the kingdom within the specified time, under penalty of 1,500 livres ($300) and corporal punishment if it is proved they have abused their clearance. But if it be found that a first voyage may be made with profit by a vessel bought or built in a foreign port before entering France, provision is made for extending the three months' papers for a reasonable time.

3. From whatever port her first voyage shall be made, no French vessel shall be commanded by a foreigner, and the penalty for false enrollment is, for the master or owner, the galleys; for the vessel and cargo, confiscation. But French officers or seamen found in a foreign port may be employed for the voyage in a higher capacity than the grade to which they belong, if duly enregistered by the consul, who shall furnish duplicate rolls to the officers of the French port to which the ship shall be bound. Upon her arrival at this port, if the owners of the foreign bought or built ship shall still find it necessary to employ the mariners in their advanced grade, they may be formally advanced according to the law of 1689.

4. The clerk in giving a clearance, shall take up the old one, and this he shall keep until he makes up his report. And if the master or captain do not surrender the same their vessels shall be confiscated as without papers, according to the law of 1681. If a ship has changed masters, he who asks for a clearance shall show the one of the preceding voyage; and the first master must give it to him, under penalty of an arbitrary fine and of imprisonment, which shall last until he has returned the said clearance, or has shown what has become of it; without which the vessel and lading shall be confiscated, as having sailed without papers.

5. The certificate shall be furnished by the authorities gratis, on unstamped paper.

6. No papers shall be given to anybody but licensed captains or masters.

7. No clerk may issue blank clearances, but he must give out those consecutively numbered, and he must be careful not to give foreign vessels a clearance on blanks provided for domestic vessels, under penalty of a thousand livres ($200) and must respond to this in his own and private name, under still more severe pains.

Section 8 provides for declarations in the case of foreign built ships, which, according to section 9 shall be verified before French consuls.

10. No consul on the Mediterranean shall give a clearance or passport under any pretext whatever. They, and the ambassador at Constantinople are strictly enjoined to cause the French flag to be hauled down from any foreign vessel which may undertake to fly the same, to arrest any French masters or owners which may have lent them their names, and to send them and their papers to Marseilles for trial, sending to the admiralty privately all the facts in the case. No consul, however, is excluded from admitting under his protection the foreign vessels which may float the flag of their own country or that of Jerusalem, if by his refusal they might claim the same protection from the consuls of the other nations, they paying the usual consular fees according to the capitulations and the usage which is always practiced.

There are eight more sections to this old statute, but enough has been given to show the onerous nature of the marine regulations of the period, as well as the exaggerated penalties which were levied upon delinquents.

Around the Lakes.

The S. C. Baldwin lumber tow, owned by Whitney of Detroit, is being sold.

M. McGrath of Muskegon has sold the schooner Quickstep to Milwaukee parties for $5,000.

Capt. McManus, last season mate of the Sitka, will sail the George Spencer, vice Capt. Cowan, who will command the John Mitchell.

Through Mr. J. S. Ashley, Cleveland agent, the New York and Cleveland Gas Coal Company has just placed an order for twelve coal buckets with the Ludlow Manufacturing Company. The buckets are to be of the large size, 5½x7 feet.

Capt. Henry Ellis, master of the steamer Avery, who died of Bright's disease at Detroit, Saturday, had been in the employ of Hawgood & Avery, vessel owners, for thirteen years. He was one of the first members of the Shipmasters' Excelsior Marine Benevolent Association.

Frank Campbell and F. L. McDonald of Duluth were the lowest bidders for the construction of cribs for range lights in the Ste. Mary's river. Their bid of $8,539 was recommended for acceptance by the light-house engineer. The cribs will be built of wood filled in with stone.

Capt. Joseph Braman, harbormaster of the port of Milwaukee, died Monday. Capt. Braman was sixty-eight years old. He commanded some of the best sailing vessels in the early days of lake navigation. He was appointed harbormaster in 1890, succeeding Capt. James F. Trowell.

Capt. Miner, last season in the steamer E. C. Pope, and Capt. Wm. Brown, who has been in the Bradley fleet for a number of years, will command the two new monitors building at the yard of the Cleveland Ship Building Company for the Lake Superior Iron Company. Capt. Frank Fick, last season in the steamer M. B. Grover, has bought an interest in the steamer Fedora and will sail her.

Mrs. Harry W. Granger, whose husband died in Detroit a short time ago, has issued a circular letter stating that the tracings of complete sets of working drawings for compound and triple expansion marine engines, which Mr. Granger designed during the last ten years, are now in her possession at St. Clair, Mich., ane that she can supply full sets of blue prints, at very reasonable rates, for a large number of engines of various sizes.

If the promoters of mining enterprises on the new Mesaba iron range of Minnesota manage to complete the two railways and docks now under way so as to ship even a small quantity of ore from Duluth towards the close of the coming season, the preparations for Lake Superior business in 1893 will certainly be on a big scale, as Marquette, Ashland, Two Harbors, Duluth, and possibly Huron Bay will be listed among the ore shipping ports.

Fifty-Second Congress—First Session.

The following bills of interest to lake vessel owners have been introduced in Congress recently:

S. 2,056, Sawyer—To repeal the provisions of the law known as the line carrying projectile law, so far as they relate to steamers plying exclusively upon any of the lakes, bays or sounds of the United States.

S. 2,099, Allen—To amend Sec. 4,415 of the revised statutes relating to inspectors of hulls and boilers

H. R. 5,560, Enochs—Authorizing the secretary of war to cause a survey to be made for a ship canal connecting the waters of Lake Erie and the Ohio river between the city of Cleveland and the city of Portsmouth, Ohio.

H. R. 5,441, Fithian—For the free admission to American registry of ships built in foreign countries.

H. R. 5,890, Payne.—Directing a survey for a harbor of refuge in Mexico bay, Lake Ontario.

H. R. 5,950, Clover.—Giving states the right to issue their bonds to the United States, not exceeding 15 per cent of assessed taxable value, at 2½ per cent. interest, for increasing facilities for transportation by railroads and waterways.

H. R. 5,952, Hooker.—To provide for the improvement and survey of Dunkirk harbor.

☞SEND YOUR ORDER FOR "PATTERSON'S NAUTICAL DICTIONARY" ($5) TO THE "MARINE REVIEW" AT ONCE.

Legislative Measures.

Senator Vilas' bill providing that vessels in the coasting trade on the lakes shall report every time they enter or leave port, whether taking on or discharging cargo or entering and leaving light, has passed the Senate. If this bill becomes a law there will undoubtedly be some objection to it from vessel masters, but the REVIEW does not propose to raise a hand against its passage. Statistics of lake commerce are wanted.

New canal schemes that interest only the Congressman introducing them and a few of their local constituents, find their way into Congress every week of late. One of the latest is contained in a bill proposing a survey for a ship canal from Lake Erie to the Ohio river by way of Cleveland and Portsmouth. Such a canal would be of about as much use as a waterway from the head of Lake Superior to the Mississippi river, for which petitions are also being presented to Congress.

Will Keep a Lighter at the Sault.

It is the intention of the American Steel Barge Company to equip a lighter with steam pumps and other necessary apparatus and have it in readiness to relieve any of that company's eighteen vessels that may get on while running the St. Mary's river. Capt. McDougall suggested it some time ago, but nothing definite was decided upon until recently, when Capt. A. C. Chapman was appointed agent of the barge company at the Sault. He will look after the interests of the whalebacks there and will have charge of the lighter. Private parties already have a good lighter at that point, and it is not likely that the new lighter will attend to outside business.

Publications.

Any one having interest in South American states should secure a copy of the first annual report issued by the Bureau of American Republics, Washington, D. C.

Ship builders will find data that will be of value to them in the annusl report of Chief Constructor T. D. Wilson, United States Navy. There are probably few government positions that require a more capable and alert man than that of constructor of the new navy.

The Register of Iron and Steel Vessels and Rules of the United States Standard Steampship Owners', Builders' and Underwriters' Association, Limited, for 1892, has been received. The passenger steamer Virginia, built by the Globe Iron Works Company, is rated A1, 25 years, and the monitors building at the yard of the Cleveland Ship Building Company, are given a contemplated class of A1, 20 years.

The Engineers' Gazette Annual, published by the Tower Publishing Company, 91 Minories, London, England, is valuable enough to enclose a shilling and mail rate to them for a copy. Ready reference notes for engineers, miscellany and much valuable information is contained. There is nothing like it published here.

The annual report of Capt. W. L. Marshall, corps of engineers, U. S. A., on improvements of Chicago and Calumet harbors is interesting and contains information on these works.

Marine Engineers' Manual and Directory, M. E. B. A. No. 1, Buffalo, is put forth in an attractive and durable form. It contains names and addresses of members and a liberal amount of advertising. There are over thirty marine engineers' associations on the lakes and if each one asks patronage from advertisers they must prove no small burden. The bona-fide circulation of these directories cannot be over 1,000 and the different ones reach the same persons. Why wouldn't it be well for these thirty associations to issue one directory?

Charles H. Benjamin, M. E., from Case School of Applied Science, lectured before M. E. B. A., No. 2, in Cleveland, Thursday evening, on Science of Steam Engineering.

Artificial Stone for Harbor Work.

Capt. W. L. Marshall United States Engineer says in his annual report: "With reference to the use of artificial stone for engineering constructions I have to say that it is no longer experimental. I have to refer to the aqueduct for the supply of the city of Paris, France, with water; to the Liverpool docks England; to the Manchester ship canal, England; to the magazines and other masonry for our fortifications, some of which, as at Portland, Me., have been exposed for years to very vigorous climates; and finally to the canal St. Dennis, France, where near Paris a very important canal lock has been entirely constructed of a rubble concrete, without a single cut stone being employed in its construction. Moreover, I have built in Chicago some 6,000 cubic yards of artificial stone for the public improvement of the Lake Michigan front of Lincoln Park, for the commissioners of Lincoln Park, and am familiar with its manipulation. This material has resisted three Chicago winters, without frost cracks, and is now as sound as when laid. I believe that this material should be more extensively used upon river and harbor works, especially where skilled labor is scarce—to hew stone and lay it up—and where good stone is difficult to obtain and expensive."

What Others Think of Us.

Through subscribers of the REVIEW who drift away from the lakes something is learned of the lack of knowledge regarding the extent of commerce on American inland waters. William R. Calligan says in asking that the paper be sent to him in Manchester, England: "The plates I received with the REVIEW while in the states have been very much admired here and those to whom I have shown them are really astonished at the build and size of our lake craft."

"I want to tell you something of what sailors on the Pacific think of the lakes," says Henry Montague of West Bay City. "A year ago I was in San Francisco, Portland, Victoria, Seattle, Tacoma, Honolulu, Aukland and Sidney. They could not be made to believe me when I told them of the magnitude of lake commerce, and the statement that Chicago has more commerce in six months than that of San Francisco for a full year caused a smile of derision. They were equally credulous on being told that the largest railway transfer boats in the country are operated on the Detroit river. The most skillful job I ever saw done there was on the ship John O'Brien. She was completely rebuilt while lying at anchor, but in most respects the shipping and its facilities on the Pacific coast are very much behind the lakes. In Sidney the lakes are almost unknown. Some of the sailors who have seen them on the map do not know that there is a single merchant vessel afloat on them. The most unlearned of our lake mariners are better posted than the majority of salt-water men as regards matters in which they are not directly concerned. Superstition and a want of ambition act against progress among them."

The Forrest silver bronze packing has been specified for the fast twin-screw steamer now building by the Harlan & Hollingsworth Company, having stood the test of triple expansion engines' piston and tail rods, and valve stems, on the fast steamer Monmouth for over two years, without any attention, doing the work automatically, with 160 pounds pressure, 160 revolutions, and 800 piston feet per minute. The vibrations of the rods do not disturb this packing at all, as it races around the stuffing box clinging to the rod, the springs on the studs outside keeping it in contact with the rod, and holding it seated on its valve in the bottom of the stuffing box.

The Continental Machine company, Cleveland, has furnished a deck hoist for the David Wallace and has orders for similar machines for the Georger and Camden. This new hoist has several features of superiority over other deck hoists on the market.

Lake Exhibit at the World's Fair.

Lieut. A. C. Baker, U. S. N., has been placed in charge of the marine division, transportation exhibits department of the World's Fair, and now that this branch of the exposition has been placed in competent hands, it is to be hoped that lake ship builders and vessel owners will show a proper interest in presenting a complete and instructive display. As far as can be learned no effort has as yet been made on the lakes to do more than present a few models of modern steamers. Wm. W. Hudson of Detroit has tried to interest vessel owners in presenting some of the historical features of lake navigation but progress in this direction has not been encouraging. Vessels and boats of peculiar type and build will be placed on the lagoon at the fair gronnds for pleasure uses. The transportation department has authorized Chief Burnham to solicit bids for fifty or more small boats for that purpose, to be propelled by power of any known description. It is stipulated that each shall be 34 feet in length, with 9 feet beam, of ornamental design, and capacity for thirty passengers. The collection of a small charge only as contemplated will yield to the exposition a handsome revenue.

The Radical Frye Bill.

At a meeting to be held Friday, the 19th inst., the Cleveland Vessel Owners' Association will consider Senate bill No. 1,755, introduced a short time ago by Mr. Frye, and will undoubtedly enter a very strong protest against its passage. This is the measure which proposes the inspection of sailing vessels, and provides rules for the manufacture of boilers and examination of engineers that are out of proportion to all that is reasonable as regards the exercise of government power over the merchant marine for the safety of life. The bill was prepared by three officers of the revenue marine, appointed by the secretary of the treasury to consider the recommendations of the International Marine Conference. On account of its exacting provisions there is little danger that it will pass either house in its present form. The National Board of Steam Navigation, New York Maritime Exchange and other organizations directly interested are preparing to oppose the bill, and marine engineers of the country also object to it.

Defending His Course.

In a communication elsewhere in this issue, Wm. W. Bates, ex-commissioner of navigation, speaks in very plain terms regarding his retirement from office. He also has the following to say in an interview printed a few days ago in the Washington Star:

"It is untrue that Secretary Windom ever found fault to me or to any of my freinds, to my knowledge, about anything contained in my report of 1890. I believe it untrue that he disavowed any of its matter, and it is false that he ever revised a line of it. So far as I ever ascertained, from contact with this good, just and great man, there was nothing unsatisfactory in my conduct of the bureau of navigation. Had he lived I have every reason to believe our pleasant relations would have continued. Mr. Windom sympathized deeply with our ruined shipping interest in the foreign trade, and was careful to learn from personal interviews before my appointment that I, too, was what the press termed an 'advanced thinker on the subject of the shipping of the United States.' He freely gave the great exertion that ended his life to promote the shipping cause.

"As to my not keeping to the lines of policy laid down by the president there must be some mistake. These lines are understood to be those of the Chicago platform, the rehabilitation of the merchant marine by protection of some kind, of course. I happen to have been instrumental in having that plank inserted. I proposed it in an address before the committee on resolutions and ought to know as well as the president what was meant by its language. This was protection on the plan of bounties as advocated by the American Shipping and Industrial League. In due time the shipping interests asked for the bread that was promised but received a stone. For the narrow original majority in the Fifty-First Congress the republican party is mainly indebted to the shipping plank of the Chicago platform. If it is now in order to repudiate that plank and turn its supporters out of office, as it seems to be, it is no wonder these acts are accompanied by misrepresentation and false statements to the press. The old story of the wolf and the lamb well illustrates the character of such incidents.

"It is not true that Mr. Foster has revised my report of 1891. He first rejected a review of shipping history, apparently for the purpose of undermining the best argument that can be made for the protection of shipping in the foreign trade, and after I had carefully revised what remained he suppressed the whole it. It is therefore untrue that my report for 1891 has appeared in an 'official form,' and if ever it does it will be because a higher authority than Mr. Foster directs its publication. Such republican politics as appears to be involved in this manifestation is something new to me. It may be Napoleonic, and I think it is. At first sight I don't like it. But I try to take life philosophically. When I get into a bear garden I get out of it."

In General.

The Wisconsin inventor of the whaleback ship steps forward to say that the whaleback is equally adaptabte for war as for peace purposes. Why not? War is but another word for a whaling expedition and if Chili starts in to whale us, of course we shall have to whale-back.—Ex.

One of the most deserving charitable institutions on the lakes is the Floating Bethel of Cleveland, conducted by J. D. Jones, the one-armed chaplain. The thirteenth annual report of the bethel just issued shows the collection and distribution within the year of more than $4,000, in addition to the church and reading room benefits. Support is mainly from vessel owners.

Duluth's plans for a high bridge over the entrance to the harbor on Lake street will be examined by a board of officers of the United States corps of engineers before anything can be done by the city authorities. This board will meet in Detroit and will consist of Gen. O. M. Poe, Col. William Ludlow and Maj. William A. Jones. A high bridge at the entrance to Duluth harbor would certainly be an obstruction to navigation, and the officers of this board may be depended upon to give a full hearing to navigation interests in the matter.

Several New Craft From Grand Haven.

Special Correspondence to the MARINE REVIEW.

GRAND HAVEN, Mich., Feb. 18.—At Duncan Robertson's shipyard work is well advanced on the passenger steamer to run in connection with the Chicago and West Michigan Railway. The frame is also up for a passenger steamer for the Booth Packing Company of Chicaho. She will be 102 feet over all and 19½ feet beam. Her boiler and engine will be built by the Montague Iron Works. The Montague works has also closed a contract with the Booth company for a steeple compound engine with cylinders 14 and .8x20 inches stroke, to be placed in the tug Hunter at Manitowoc. This makes four compound marine engines being built at these works at present.

A frame for a fish tug 75 feet over all and 16 feet beam has just been shipped from the shipyard here to West Selkirk, Manitoba, for the Booth Packing Company. Upon this frame the company paid a duty of 20 per cent.

Mr. Robertson has just closed a contract with Luddock Brothers of Frankfort, to build for them a tug 80 feet over all and 17 feet beam. Bloecker & Co. of this city will build the engine.

Bulkheads are being put into the steambarge Alice M. Gill and her cabins are being rebuilt to accommodate passengers. The passenger steamers City of Grand Rapids and Faxton are also receiving a thorough overhauling. The former will run between Traverse City and Gladstone, and the latter between Mackinaw island and the Sault.

Capt. William H. Loutit of this city, owner of the steamer Ionia, has just closed a charter with a South Chicago furnace company to carry ore from Escanaba to that point. Capt. William McGregor has made a similar charter for his steamer Mary Boyce aud consort, Mary A. McGregor. The steamer Charles Street, also owned by Capt. Loutit, will carry ore from Escanaba to this point the same as last season.

Col. Ludlow of the United States corps of engineers has a man taking photographs of the principal harbors on this shore where there is winter navigation. They are for the engineers' department.

Seymour Brothers of Manistee, owners of the steamer Petoskey, are said to have secured the steamer Puritan from the Graham & Morton Company of Chicago, through lease and the coming season will run her between Chicago and Mackinac in the freight and passenger trade.

VESSEL AND MACHINERY EXCHANGE.

Space under this heading may be used gratis by our advertisers or subscribers to call attention to vessels or any craft, machinery, new or second hand, that they may have for sale. Those wanting machinery of any kind, or wishing to purchase vessels, are invited to take advantage of the same offer. Each item will be limited to three lines. Letters concerning same must mention number attached to item and be addressed MARINE REVIEW, 510 Perry-Payne Building, Cleveland. O.

101—FOR SALE—Small steambarge for $4,000.

102—WANTED—For cash, schooner of from 500 to 700 tons capacity; B1 or lower class.

103—FOR SALE—Towbarge of 450 tons or 275 M. lumber capacity; rates B.1½; cheap for cash.

104—FOR SALE—Excursion steamer, 115 feet long; compound engine; allowed 500 passengers.

105—FOR SALE—Fish tug, 50 feet long; in service two years; engine 8 x10.

106—WANTED—Harbor tug with engine about 20x22.

107—FOR SALE—Harbor tugs, schooners, steam barges, passenger steamers and barges

108—FOR SALE—Passenger steamer 125 feet long and rates A1.

109—FOR SALE—Screw excursion steamer 112½ feet over all, 20½ feet beam, 7½ feet deep with speed of 11 miles.

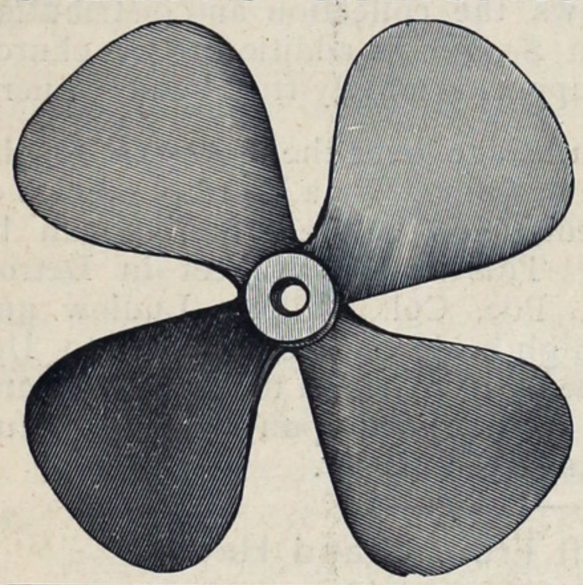
110—FOR SALE—Steamer Business, carries 1350 ore.

FOR SALE!—Passenger Steamer.

Length 125 feet, beam 25 feet, depth 9 feet, tonnage 346 gross; built in 1891. Rates A1 in good condition, economical on fuel and in every way desirable for parties desiring boat of this size. For price and further particulars, &c., address,

No. 108, MARINE REVIEW, Cleveland, O.

SHERIFFS MANUFACTURING COMPANY,



C. STARKE, Pres. W. H. MEYER, V. Pres.
THOS. W. SHERIFFS, Manager.

Manufacturers of

MARINE ENGINES,

PROPELLER WHEELS,

Dredge Machinery of Latest Design.

MARINE REPAIRS AT ALL HOURS.

124, 126, 128, 130 & 132 Barclay Street,

MILWAUKEE, WIS.

Telephone 163.

1867. PERFECT SATISFACTION GUARANTEED. 1892.

A. G. HARBAUGH & CO.,

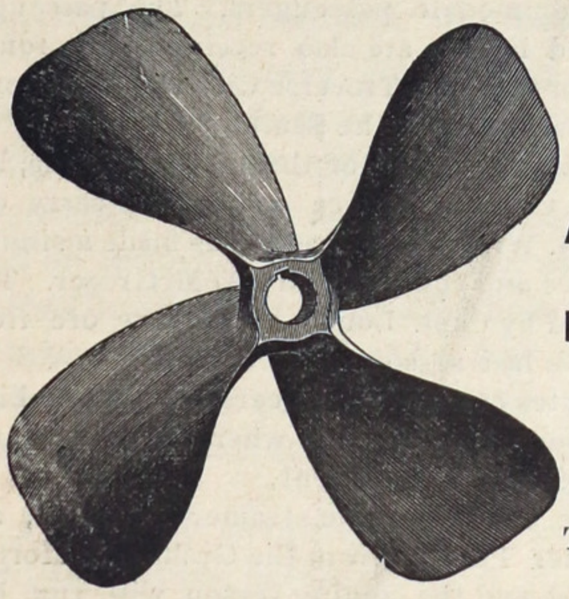
34 & 36 River Street, CLEVELAND, O.

Manufacturers of Strictly Pure and Acidless Lard Oils, specially adapted for Steamboat use.

Will furnish Brand free for Ship Chandlers or other dealers who desire their name and address on packages.

H. G. TROUT,
KING IRON WORKS,

BUFFALO, N. Y.,



MANUFACTURERS OF

TRIPLE EXPANSION, THREE CYLINDER, FORE AND AFT And STEEPLE COMPOUND MARINE ENGINES,

High and Low Pressure Engines, Sectional, Propeller, Tug and Yacht Wheels.

Cowles Aluminum and Manganese Bronze Propeller Wheels.

These Wheels are noted for their extra speed, towing power and proportionate saving of coal.

PRICES QUOTED ON APPLICATION.

WANTED TO CHARTER

For Service about May 15th, a

Passenger Steamer,

To accommodate 30 or 40 male passengers, for a number of trips lasting about a week each.

Apply or address: **MARINE REVIEW, 510 Perry-Payne Bldg., Cleveland, O.**

FOR SALE.

HARBOR TUGS, SCHOONERS, STEAM BARGES, PASSENGER STEAMERS AND LUMRER BARGES,

CHEAP.

10 Address: **M. L. MARSH & CO., Sandusky, Ohio.**

SCHOONERS for SALE.

The Schooner Wyandotte, rates A2, carries 450 M lumbe
Also, Schooner H. C. Sprague, carries 450 to 500 M lumber,
Both light draught.
Also, Schooner William Case, carries 350 M lumber.
Everything about these boats is in first-class condition.

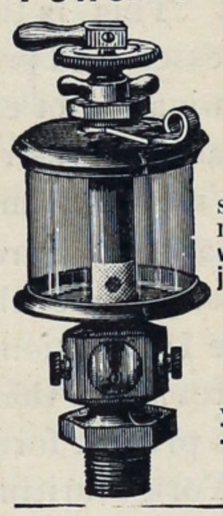
Address, **BILLS & KOCH, Toledo, Ohio.**

FOR SALE—FINE EXCURSION BOAT.

115 feet long, 26 feet beam, 7½ feet draft, compound engines; will guarantee to run 200 miles with five (5) tons of coal; allowed 500 passengers; WILL SELL CHEAP; EASY TERMS; owner going out of business.

8 **Address, No. 104, MARINE REVIEW, Cleveland, O.**

Powell's Signal Oilers.



INCOMPARABLE FOR ENGINES AND DYNAMOS.

Convenient to fill.
Easy to regulate.
Flow of oil can be instantly shut off by simply moving the lever down—**without disturbing the adjustment.**
Also made Double and Triple Sight feed for Marine Engines.
Your dealer can supply you. Manufactured by

The Wm. Powell Co.,

CINCINNATI, O.

FOR YACHTS.

Our Patent Boiler will give dry steam; will carry a steady water-line; will raise **One Hundred** pounds of steam in one-half the time ordinary boilers require. See what experts say:

"Perfect circulation and dry steam."—*Prof. R. H. Thurston.* "Would not do without your improvement in a boat boiler."—*Herman Westinghouse.*

A Working Glass Model may be seen at 45 Dey St., New York City.

B. W. PAYNE & SONS, Elmira, N. Y.

POPULAR and INSTRUCTIVE BOOKS

For Engineers and Firemen,

—BY—

STEPHEN ROPER, Engineer.

ROPER'S HAND BOOKS.

Hand-Book of Land and Marine Engines	$3 50
Engineers' Handy Book	3 50
Hand-Book of Modern Steam Fire Engines	3 50
Hand-Book of the Locomotive	2 50
Instructions and Suggestions for Engineers and Firemen	2 00
Use and Abuse of the Steam Boiler	2 00
Catechism of High Pressure Steam Engines	2 00
Questions and Answers for Engineers	3 00
Simple Process	50
Care and Management of the Steam Boiler	2 00
Young Engineers' Own Book	3 00

These books embrace all branches of Steam Engineering—Marine, Stationary, Locomotive and Fire. Any engineer who wishes to be well informed in all the duties of his calling should provide himself with a full set. They are the only books of the kind ever published in this country, and they are so plain that any engineer or fireman that can read, can easily understand them.

Any of the above books will be sent to any part of the United States or Canada on receipt of list price.

Send money in Registered Letter, P. O. Order or Postal Note.

EDWARD MEEKS, Publisher,

No. 1012 Walnut St., PHILADELPHIA, PA.

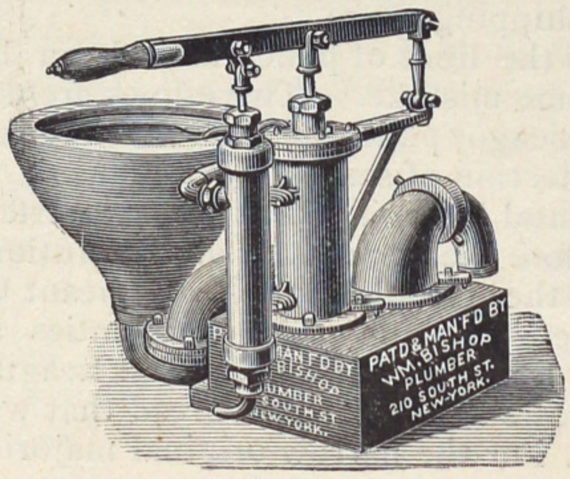
I. H. OWEN, PRESIDENT, Chicago. F. H. VAN CLEVE, SEC. Escanaba. CAPT. GEO. BARTLEY, SUPT. Escanaba.

ESCANABA TOWING & WRECKING CO., Escanaba, Mich.

Tugs, Lighters, Steam Pumps, Hawsers, Hydraulic Jacks and Diving Appliances always ready.

TUG MONARCH,	Engine Compound, Cylinder 16 and 30 inches diameter, 30 inch. Stroke, Steam Pressure Allowed, 125 pounds.
TUG DELTA,	Cylinder 20 by 22, Steam Pressure Allowed, 105 pounds.
TUG OWEN,	Cylinder 20 by 20, Steam Pressure Allowed, 104 pounds.

CENTRIFUGAL PUMPS, Seven and Fourteen Inch Suction.



Combination Pump and Water Closet

For above or below water line.
No valves or cocks to turn on or off.

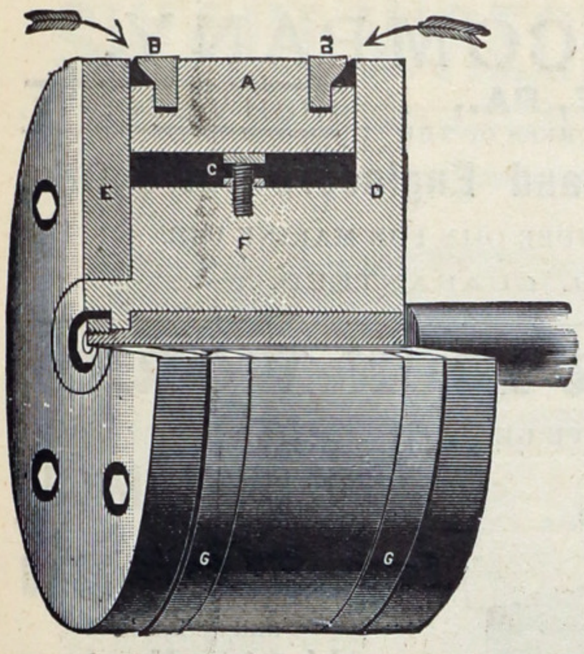
WILLIAM BISHOP,

Plumber, Coppersmith and Steam Fitter,

210 South Street, NEW YORK.

Telephone Call, 4811 Cortlandt.

YACHT PLUMBING A SPECIALTY.



ST. JOHN CYLINDER PACKING CO.

Manufacture a PACKING specially adapted to all classes and sizes of

MARINE, LAND and LOCOMOTIVE ENGINES,

Air Compressors, Water, Oil and Ammonia Pumps.

Ensures Perfectly Tight Piston with Minimum Friction and is Self-Adjusting.

It Increases the Power of Engines TEN PER CENT. and saves Fuel, Oil and Cost of Repairs.

IT WEARS THE CYLINDER ROUND AND TRUE AND RENDERS REBORING UNNECESSARY.

Highest and only awards International Exhibitions, Edinburgh and London, 1890. Special Medal of Superiority, American Institute, New York, 1888 and 1889 ; Massachusetts Charitable Mechanics Association, Boston, 1890.

☞SEND FOR DESCRIPTIVE CIRCULARS AND PRICE LIST.

D. DeKREMEN, Sales Agent, 280 Broadway, New York.

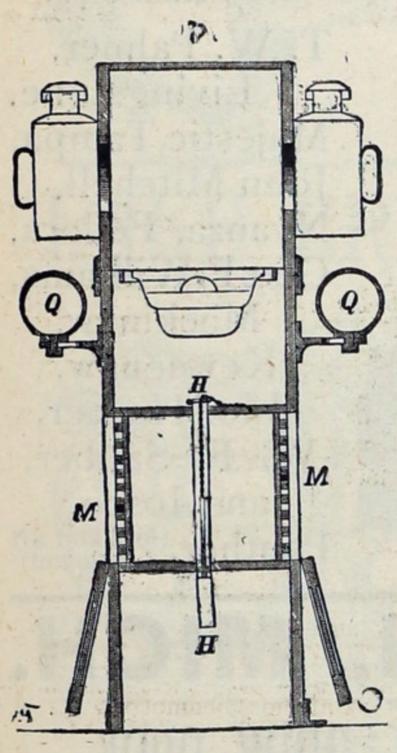
PATENT ADJUSATBLE

BINNACLE and COMPASS

FOR PILOT HOUSES,

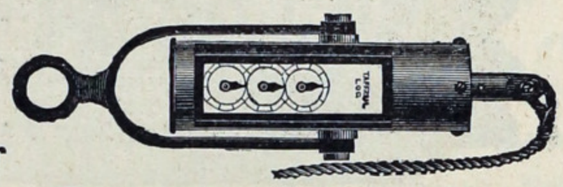
With Directions for Adjustment.

Send for Circular.

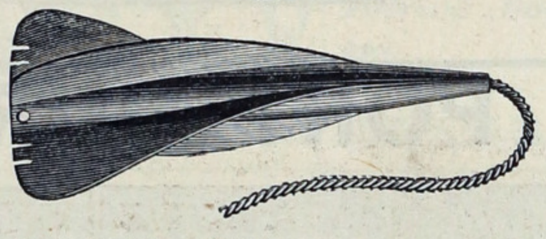


TAFFRAIL LOG,

With Adjustable Rotator

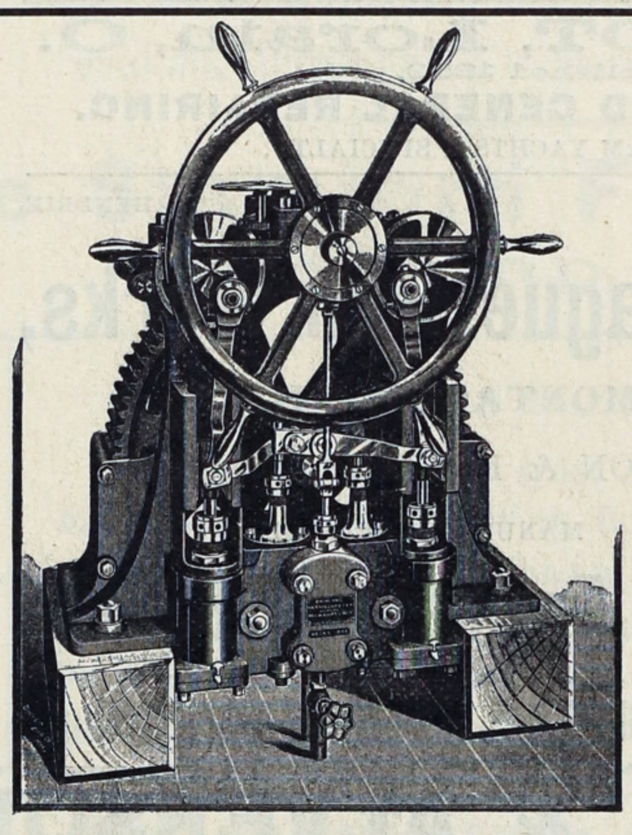


The Best Log in Existence.



MANUFACTURED BY

JOHN BLISS & CO., 128 Front Street, NEW YORK.



No. 4 BECK

Steam Steering Gear.

TUG PATTERN—Floor Space 18x36 In.

Changed from steam to hand gear instantly. Rudder moved hard-over, through one or more turns of wheel as desired. Is self-locking. Will cushion any blow on rudder and return to position automatically All gears are machine cut. Position of Rudder shown by Indicator at all times.

PAWLING & HARNISCHFEGER,

BUILDERS OF

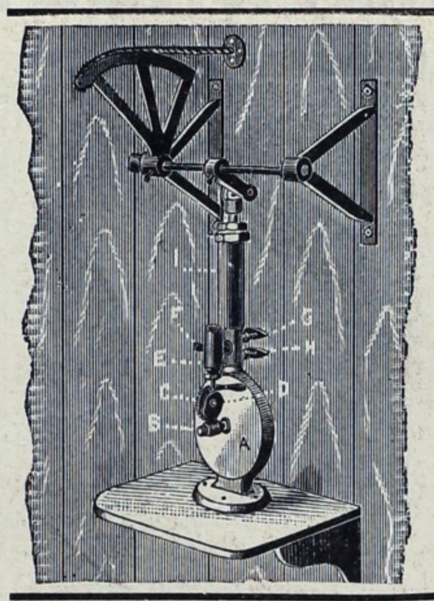
Beck Duplex Feed Engines,

Steam Steering Gears and Hoisting Engines,

Electric, Steam and Hand Cranes,

Special Machinery and Tools.

156-168 Clinton St. Milwaukee, Wis.



RYMER'S

Code and Fog Whistle Operator

Can be placed on a bracket in pilot house.

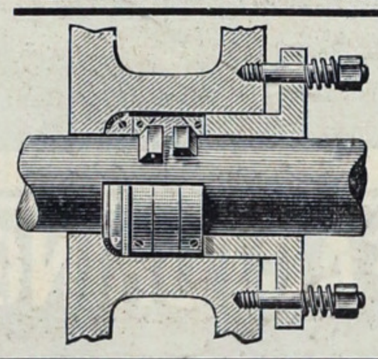
Operation as a fog whistle does not interfere with its use as a code signal.

WM. RYMER,

Agent and Manufacturer,

395 Champlain St., DETROIT, MICH.

Correspondence Solicited.



Forrest's Silver Bronze Packing.

Applied to any stuffing box, without disconnecting. Steam, air and water tight without soft packing, under the highest steam pressure and piston velocity, non-corrosive, automatic, cannot get out of order, admits of excessive vibrations of rods, does not bind, economical, satisfactory, **guaranteed** to last 2 to 10 years with no attention. Will pack engines by the year. Used on the best steamers in New York Harbor. References.

115 Liberty Street, New York.

SAMUEL WOODHOUSE,

(Successor to Ohio Chain Co.)

Manufacturer of Crane, Cable, Dredge and Crown Proof

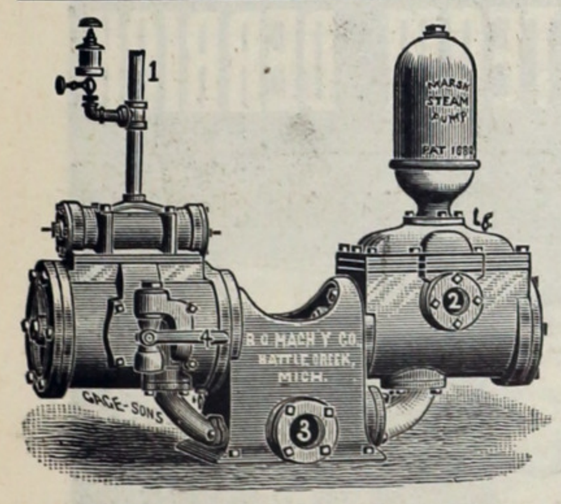
COIL CHAINS, SAFETY CHAINS

AND COAL MINE CHAINS MADE TO ORDER.

Chains of Every Description Made to Fit any Wheel or Machine. First Premium, Siver Medal, awarded at Northern Ohio Fairs of 1870, 1872 and 1873.

OFFICE and WORKS, NEWBURGH, O.

The MARINE REVIEW and the MARINE ENGINEER, London, one year for $4. Write the MARINE REVIEW.



MARSH STEAM PUMP,

Absolute Actuation and Regulation Without Use of Tappets, Levers or other Mechanical Connections.

FOR MARINE AND STATIONARY BOILERS.

Smaller Sizes With or Without Hand Pumping Attachment.

Exhaust Returned to Boiler. Heats Feed Water Forty to Fifty Degrees, according to tests made by Prof. M. E. Cooley, of the University of Michigan.

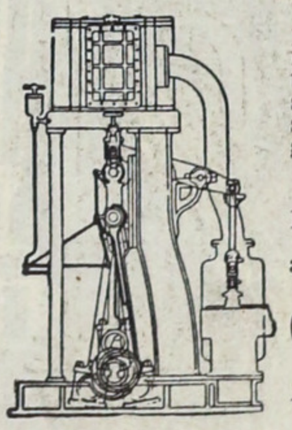
Steam Valves Actuated by Direct Boiler Pressure.

Has Fewer Wearing Parts than ANY OTHER Steam Pump.

For Circulars and Prices, address

STRONG, CARLISLE & TURNEY, Cleveland, O. STANNARD & DILLON, Chicago, Ill.
DETROIT SHEET METAL & BRASS WORKS, Detroit, Mich. H. P. TOBEY, Toledo, O.
SMALLEY BROS. & CO., Bay City, Mich. CARLETON & COLE, Port Huron, Mich.
or BATTLE CREEK MACHINERY CO., Manufacturers, Battle Creek, Mich.

THE O'CONNELL GREASER,



During the past three years hundreds of marine engines of from 2,000 to 4,000 h. p. have been served, as well as high speed electric light engines.

RESULTS:

Sure control of Crank Pin.

Stoppage of Lard Oil account.

Perfectly clean Engine

O'Connell & Cahill,

Manistee, Mich.

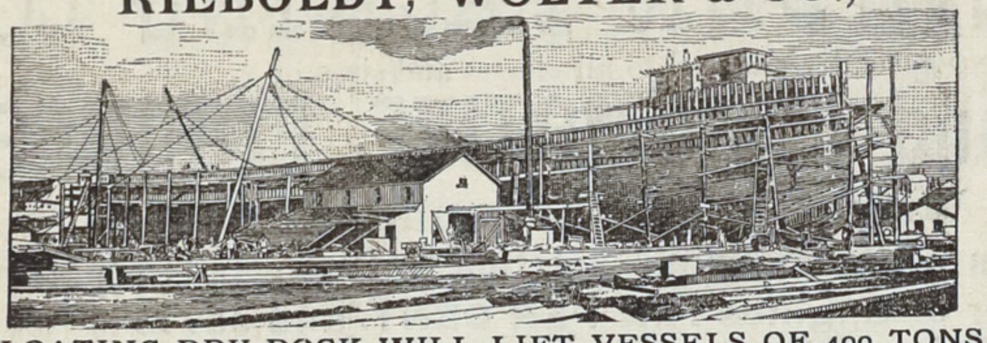
Dark lines indicate apparatus.

Patterson's Nautical Dictionary, $5.00. Order from the Marine Review, Cleveland, O.

CON. STARKE. JOS. WOLTER. AUG. RIEBOLDT.

RIEBOLDT, WOLTER & CO.,

SHIPBUILDERS, SHEBOYGAN, WIS.



FLOATING DRY DOCK WILL LIFT VESSELS OF 400 TONS.

HAYES, HEINE & STACK,

MANUFACTURERS OF

MATTRESSES PILLOWS, AND BEDDING.

We make a specialty of fitting out vessels. Send for Prices.

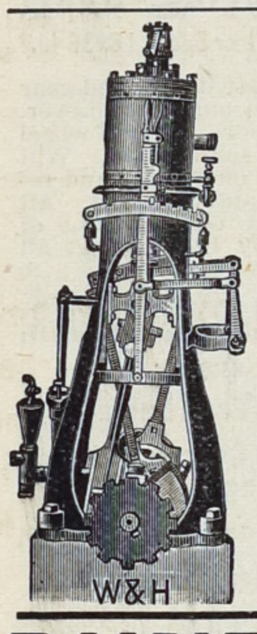
70 EAST RIVER STREET, CLEVELAND, OHIO.

H. D. ROOT, Lorain, O.

Established 1853.

SHIPBUILDING AND GENERAL REPAIRING.

TUGS AND STEAM YACHTS A SPECIALTY.



J. D. WILSON. M. HENDRIE.

Montague Iron Works,

MONTAGUE, MICH.

WILSON & HENDRIE, Proprietors.

MANUFACTURERS OF

Marine Engines and Boilers,

AND GENERAL MILL MACHINERY.

ERIE OIL COMPANY,

HIGH FLASH. **ERIE, PA.,** **HIGH VISCOSITY.**

MANUFACTURERS OF THE

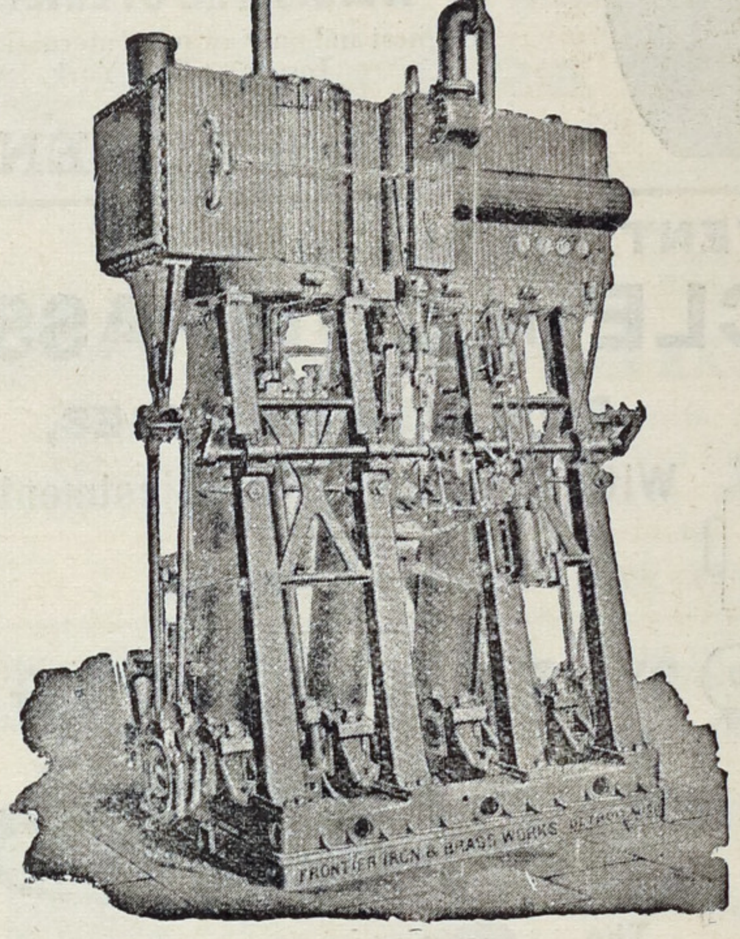
Monarch Valve Cylinder and Engineers Valve Oils,

THE MOST PERFECT CYLINDER OILS FOR MARINE USE.

EVERY BARREL GUARANTEED.

THE FRONTIER IRON WORKS,

Fitted with "JOY "PATENT VALVE GEAR.



DETROIT, MICH.,

Builders of

TRIPLE EXPANSION

and all kinds of

Marine Engines

Engines furnished for Steamships:

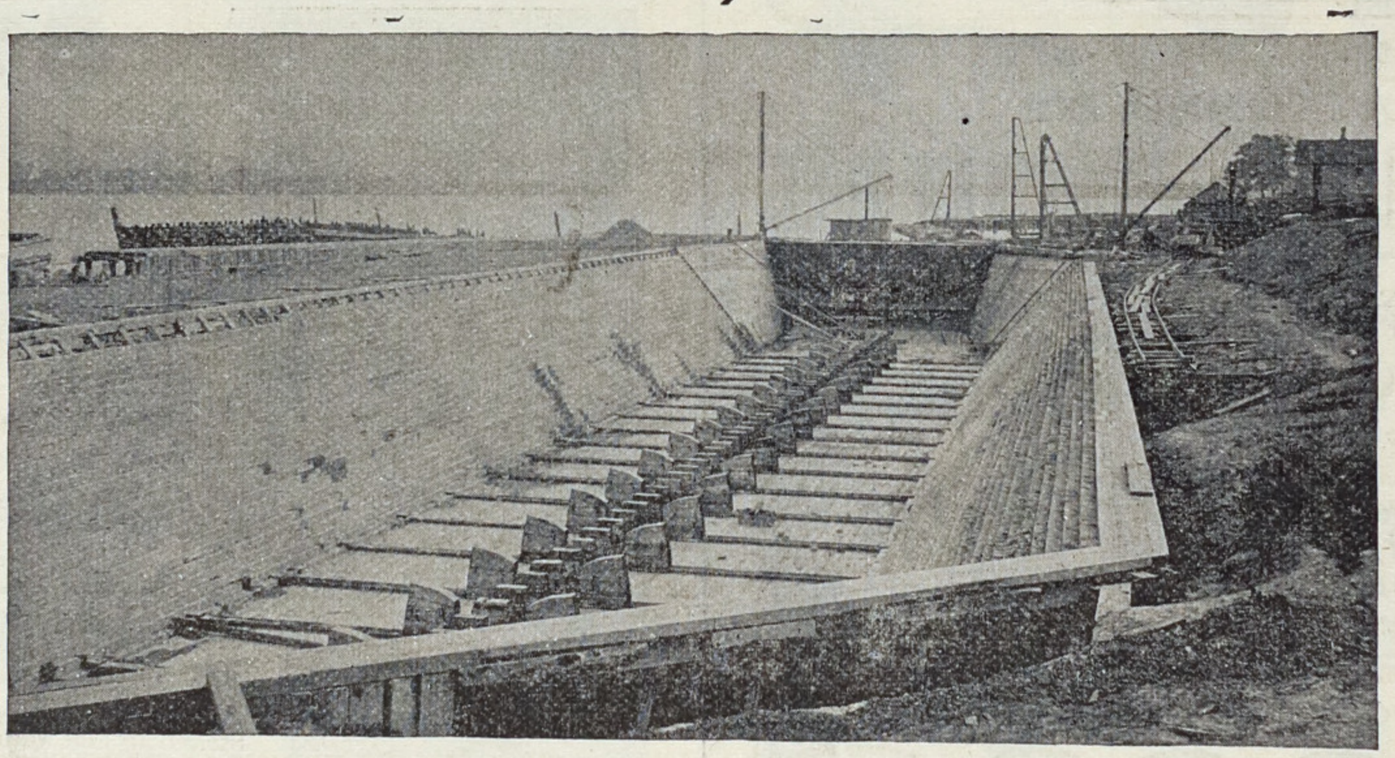
T. W. Palmer,
Livingstone,
Majestic, Tampa,
John Mitchell,
Nyanza, Fedora,
Geo. F. Williams,
Mackinaw,
Keweenaw,
Jno. Harper,
W. F. Sauber,
and Iosco.
Panther, (fore and aft compound)

DUNFORD & ALVERSON, PORT HURON, MICH.

SHIP BUILDING.

DOCKING,
REPAIRING,
SPAR MAKING.

DOCK HAS PIT TO SHIP RUDDERS.



NEW DOCK.

(Largest on the Lakes.)

Length: 400 feet.

Width: on top 95 feet.
bottom 55 "
at gate 62 "

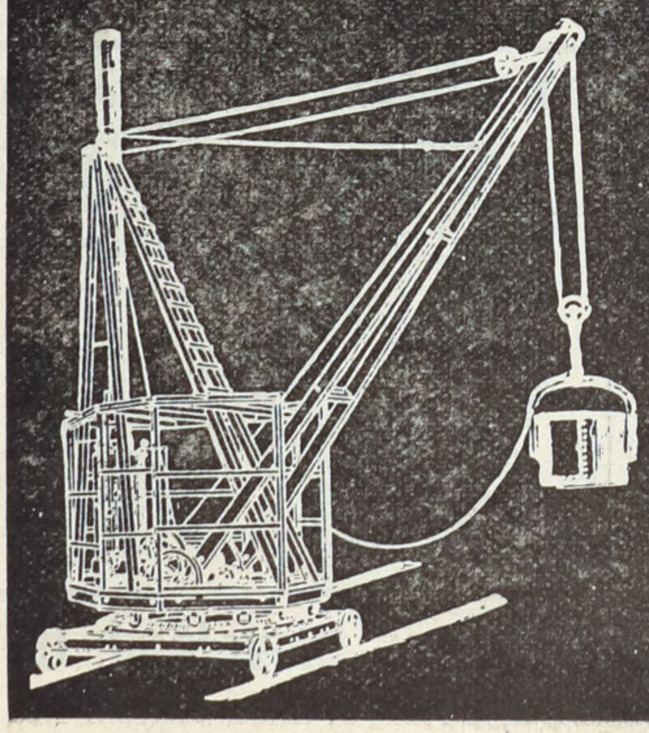
Depth: to floor 20 feet.
to sill 18 "
on blocks 16 "

Nearest Modern Dock to the SAULT or MACKINAW.

McMYLER MANUFACTURING CO., 180 COLUMBUS STREET, CLEVELAND, O.

SOLE MAKERS OF THE

McMYLER PATENT REVOLVING STEAM DERRICK



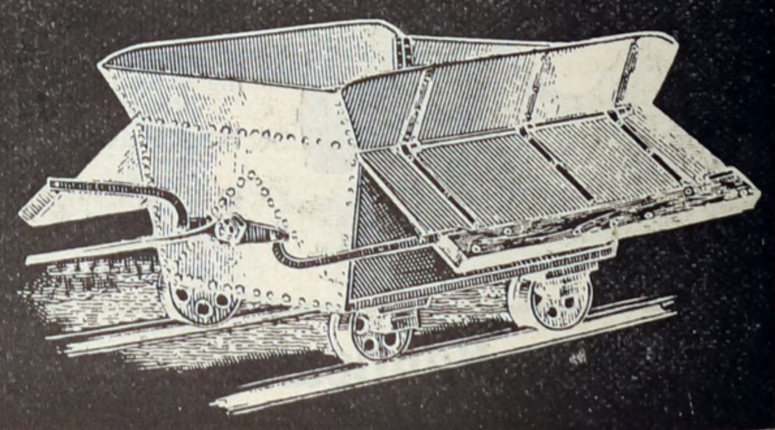
FOR HANDLING COAL, ORE AND COARSE FREIGHT OF ANY DESCRIPTION.

This Derrick can Lift Load, Alter the Radius of Boom, Swing in Either Direction at Will of Operator, and can Propel Itself on Track any Desired Distance.

BUILT FOR ANY CAPACITY WANTED

BUILDERS OF

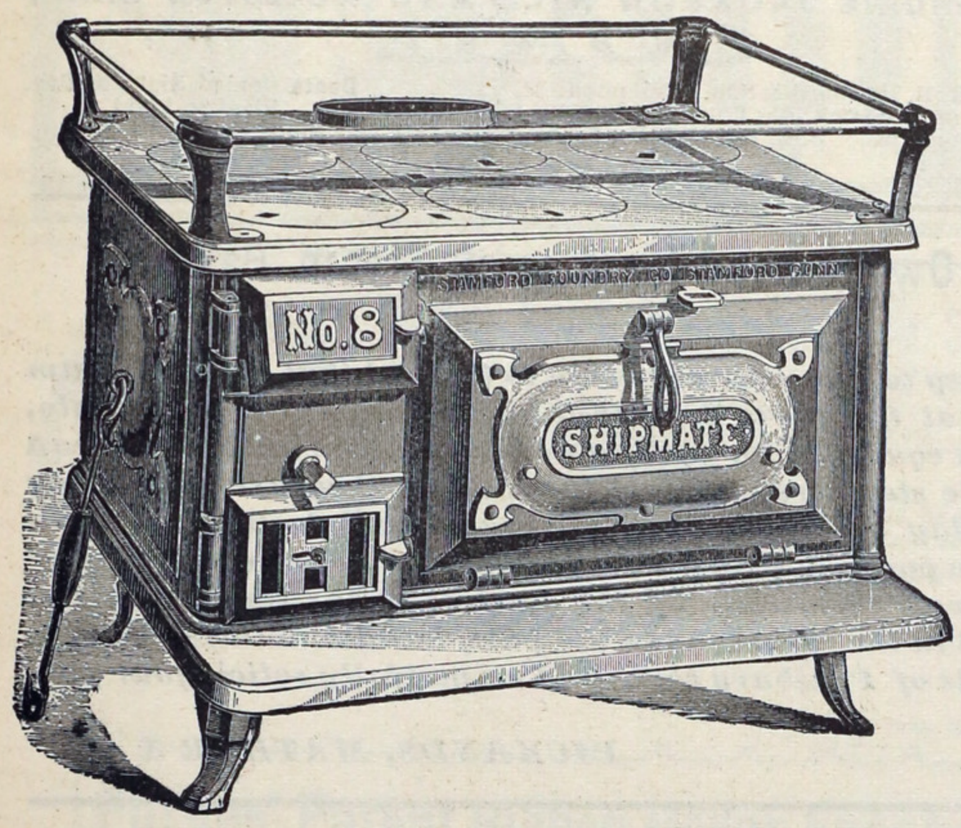
CONVEYORS, COAL BUCKETS, ORE BUCKETS AND DUMP CARS.



SWAIN WRECKING CO.

TUGS FAVORITE and SAGINAW.

TELEGRAPH
PARKER & MILLEN, DETROIT, MICH.
Capt. M. SWAIN, CHEBOYGAN, MICH.



THERE WERE MORE

SHIPMATE RANGES

Sold in 1891 than in 1890; more in 1890 than in 1889; and so on back, each year showing an increase over the year before it.

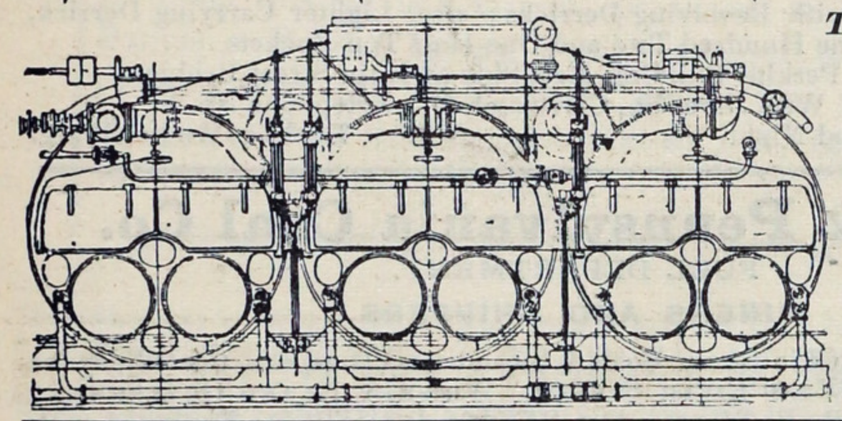
This is what is to be expected of anything so good as the SHIPMATE.

Send for Illustrated Circulars.

The Stamford Foundry Co.,

STAMFORD, CONN.

LAKE ERIE BOILER WORKS.



The Best Equipped plant in America for the manufacture of modern Marine Boilers.

—o—

BUFFALO, N.Y.

FARRAR & TREFTS,

Propeller, Yacht & Tug Wheels,

MARINE AND STATIONARY

ENGINES AND BOILERS.

REPAIRING PROMPTLY ATTENDED TO.

54 to 66 Perry Street, BUFFALO, N. Y.

Drilling Boilers and Engines a Specialty

JOHNSTON BROTHERS,

Ferrysburg Steam Boiler Works,

FERRYSBURG, MICH.

Marine, Locomotive and Stationary Boilers,

Tanks and Sheet Iron Work.

REPAIRS PROMPTLY ATTENDED TO.

HENRY BLOECKER & COMP'Y,

—MANUFACTURERS OF—

ALL CLASSES OF Marine Engines.

General Job and Repair Work promptly attended to.

GRAND HAVEN, - - MICH.

C. H. McCUTCHEON,

(Successor to SAMUEL McCUTCHEON.)

Copper, Tin and Sheet Iron Manufactory,

Steamboat and Engineers' Supplies.

All kinds of Brass Cocks, Globe Valves and Couplings, &c. Iron Pipe and Fittings, and Mill Supplies. Rubber Belting, Hose and Packings, Springs, Valves, &c., Leather Belting and Usudurian Packing.

Telephone No. 68. No. 18 Ohio Street BUFFALO, N. Y.

ERIE RUBBER CO.,

ERIE, PA.,

—MANUFACTURERS OF THE—

KEYSTONE MARINE VALVE.

These RED, AIR AND FOOT VALVES, are the Best Rubber Valves made.

PATTERSON'S NAUTICAL DICTIONARY.

"You may take my order for one, and I will very probably want another," said H. D. Goulder, admiralty attorney, when he ordered the Dictionary. It is a book of reference that any one connected with marine affairs cannot afford to be without. Send $5.00 and your order to the MARINE REVIEW, Cleveland, Ohio.

THE GRAND HAVEN SHIPBUILDING CO.,

D. ROBERTSON, Manager and Builder.

SHIPBUILDING, REBUILDING, REPAIRING,

TUGS, FISHING BOATS, YACHTS.

PHOENIX IRON WORKS

—MANUFACTURERS OF—

Modern Marine Engines AND Boilers

1223 to 1231 Fourth St., PORT HURON, MICH.

Telephone Nos. { Office, 15. Residence, 192.

Special Attention Given to Repairs.

HAVE YOU HEARD OF THE

HYDRAULIC STEERING GEARS.

IT IS ASTONISHING HOW WELL AND EASY THEY DO THEIR WORK.

Manufactured by

CRAWLEY & JOHNSTON,

CORRESPONDENCE SOLICITED. CINCINNATI, OHIO.

DULUTH DIRECTORY.

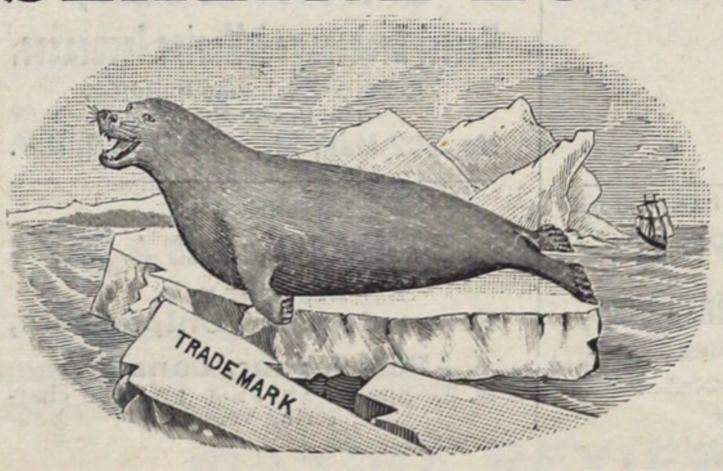
THE CLYDE IRON COMPANY,

OFFICE AND WORKS: 302, 304, 306 & 308 Lake Avenue, South, DULUTH, MINN.

R. A. WEBSTER, Supt.

Machinists, Foundrymen, Blacksmiths and Steam Fitters. Special attention given **Marine Work.** Ship Chandlery & Mill Supplies, Packings, Waste, Oils, Greases, Boiler Purgers, etc.

SEALINE LUBRICANT



Specially adapted for

Marine Engines.

A Solidified Oil. Clean, and does away with Oils and Greases. Higher fire test. Acknowledged the most economical Lubricant made.

H. B. KINGSLEY & CO.,

CLEVELAND, O.

288 SENECA STREET, (new number)

Telephone 2126.

BROKERS & ADMIRALTY ATTORNEYS.

H. D. GOULDER. GOULDER & PINNEY, O. C. PINNEY.

LAWYERS AND PROCTORS IN ADMIRALTY,

CLEVELAND, O.

ROGER M. LEE. LEE & TILDEN, DUANE H. TILDEN.

Proctors in Admiralty.

Telephone 1191. 504 Perry-Payne Bldg., CLEVELAND, O.

C. E. KREMER, *Attorney and Counselor-at-Law and Proctor in Admiralty.*

Rooms 14, 15 and 16, Bryan Block, - - 164 La Salle St., CHICAGO, ILL.

CLEVELAND BOOK BINDERY,

196 Seneca St., CLEVELAND, O.

BLANK BOOKS

In Stock and Made to Order.

BINDING

Magazines and Periodicals a Specialty.

T. G. Crosby, C. A. Macdonald, J. J. Rardon.

CROSBY, MACDONALD & CO.

General Insurance Agents,

RIALTO BUILDING, CHICAGO, ILL

C. W. Elphicke

ATTORNEY-AT-LAW AND PROCTOR IN ADMIRALTY

Marine Notary.

ASHLAND, WIS.

C. W. ELPHICKE. A. L. FITCH. JAS. A. MYERS.

C. W. ELPHICKE & CO.,

Vessel Owners and Agents, Marine Underwriters,

Rooms 10, 11 and 12, Wheeler Block. } 6 and 8 Sherman St. CHICAGO.

Telephone 1194.

JOHN C. FITZPATRICK. JOHN MITCHELL. JOHN F. WEDOW.

MITCHELL & CO.,

Vessel and Insurance Agents,

508-509 Perry-Payne Building, CLEVELAND, OHIO.

Office Telephone, 767. Residence, John Mitchell, 3506. J. C. Fitzpatrick, 2305.

White, Johnson & McCaslin,

ATTORNEYS-AT-LAW,

—AND—

Proctors in Admiralty,

26-27 Blackstone Building,

CLEVELAND, - OHIO.

JOSIAH COOK, ATTORNEY,

And Counselor at Law and Proctor and Advocate in Admiralty.

Office, Nos. 12, & 14 Spaulding's Exchange, BUFFALO, N. Y.

Special attention given to all U. S. court and admiralty business in all its branches and the collection of Seamen's wages.

THOS. WILSON,

MANAGING OWNER

WILSON'S TRANSIT LINE.

Gen. Forwarder.

Freight and Vessel Agent.

CLEVELAND, O.

WARNER & CO.,

Vessel Agents and Brokers,

Nos. 511 & 512 Perry-Payne Building,

Superior Street, CLEVELAND, O.

C. F. Palmer. Chas. Hutchinson. P. J. Minch.

PALMER & CO.,

Vessel Owners and Agents,

(John H. Palmer and Jonn T. Hutchinson, Associates.)

Perry-Payne Bldg., Cleveland, O.

W. A. HAWGOOD. C. C. CANFIELD.

HAWGOOD & CANFIELD,

Vessel Agents and Marine Insurance,

604-605 Perry-Payne Bldg.,

Cleveland, - Ohio.

Telephone No. 2395.

E. T. HITCHCOCK,

Average Adjuster,

184 Main St.,

BUFFALO, N.Y.

Moore, Bartow & Gilchrist,

Ship Brokers & Agents,

Nos, 611 & 612 Perry-Payne Building,

Superior Street, Cleveland, O.

H. J. WEBB & CO.

SHIP BROKERS, VESSEL OWNERS and AGENTS, Established in 1856. H. J. Webb & Co. will charter vessels for the lake trade. Special attention given to chartering vessels in the Lake Superior Iron Ore trade, both for the season and single trip.

☞No. 606 & 607 Perry-Payne Building, Cleveland, O. Office Telephone No. 338, Residence No 3228.

J. T. ROSE. FRANK B. LAZIER.

ROSE & LAZIER,

Vessel Agents and Brokers, and Marine Insurance,

16 Board of Trade,

DULUTH, - - MINN.

H. F. SPRAGUE,

Marine Artist,

Studio at Huron, O.

Headquarters at Mitchell & Co.'s

CLEVELAND, - OHIO.

Oil Paintings of Vessels a Specialty.

Capt. LYMAN HUNT. JAMES P. HUNT.

L. HUNT & SON,

Vessel Brokerage and Marine Insurance,

Room 9, Exchange Building. Telephone No. 522.

No. 202 Main St., BUFFALO, N.Y.

Established 1857.

THOMAS MARKS & CO.,

Merchants, Forwarders and Shipowners,

Port Arthur, Canada.

N. B.—Special attention given to chartering vessels.

FUELING COMPANIES.

THE SANDUSKY COAL COMPANY,

MINERS AND SHIPPERS OF

THE GENUINE JACKSON HILL AND WELLSTON SHAFT

COAL.

Office with R. B. Hubbard & Son. Telephone 32.
Dock Office and Derrick, Big Four (C.C.C. & St. L. R'y).
Dock Telephone 163. S. B. HUBBARD, Treas & Gen. Mgr.

Boats Coaled Night or Day. Electric Light. Night Telephone 318.

SANDUSKY, OHIO.

To Owners and Masters of Steam Barges.

—:o:—

We beg to call your attention to the fact that we have steam lighters at the ports of Cleveland, Ashtabula and Buffalo, specially equipped for fueling vessels, which enable us to run alongside steamers and fuel them while they are unloading during day or night time. We also have fueling docks at the above ports, at which we can take care of vessels not desiring to avail themselves of the services of the steam lighters. We shall in the future, as in the past, handle nothing but the best grade of Pittsburg coal, and respectfully solicit your patronage.

PICKANDS, MATHER & CO.

THE CUDDY-MULLEN COAL CO.,

Dealers in COAL. Docks at Government Pier, Whiskey Island, and Adjoining Globe Dry Dock.

All fully equipped with Revolving Derricks; also, Lighter Carrying Derrick, and One Hundred Two and One-Half Ton Buckets.

Main Office, 81 Perkins Building, East Side of Main Street Bridge.

Dock Office, 127 West River St., Cleveland, O. Telephone No. 8.

Boats Coaled Day and Night. Docks at Amherstburg.

Ohio & Pennsylvania Coal Co.

FUEL DEPARTMENT.

MINERS AND SHIPPERS,

Youghiogheny and Ohio Steam Coals. Steamboats, Tugs, etc., Coaled day or night, Docks Foot West River Street. Whiskey Island Government Pier and C. & P. R. R. Slips. Also STEAM LIGHTER—Equipped with Revolving Derrick and (100) two ton buckets.

Telephone 1608. Office, 130 West River St., CLEVELAND, OHIO.

SIMPSON & MORRISON, Compass Adjusters, and manufacturers of

All Nautical Instruments carefully repaired. **NAUTICAL INSTRUMENTS.**

Office with Upson, Walton & Co., 161 River St., Cleveland, Ohio.

ADVERTISING.

IF you wish to advertise anything anywhere at any time, write to GEO. P. ROWELL & CO., No. 10 Spruce St., New York.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers." 368 pages, price one dollar. Mailed, postage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address ROWELL'S ADVERTISING BUREAU, 10 Spruce St., N.Y.

MILWAUKEE BOILER COMPANY,

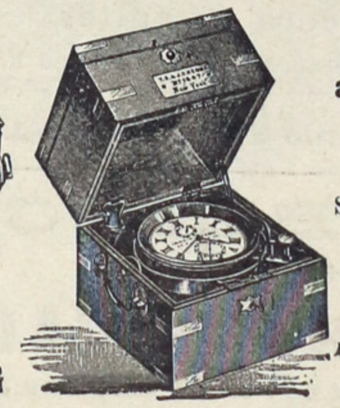
[Successor to R. Davis Marine Boiler Works.]

Manufacturers of Marine and Stationary Boilers, Smoke Stacks, Tanks, Etc.

MARINE REPAIRING SPECIALLY ATTENDED TO. | Open Day & Night. | OFFICE AND SHOPS, OREGON BET. BARCLAY & So. WATER STS.

T. L. McGREOR, Supt. **MILWAUKEE, WIS.** Telephone 742.

T. S. & J. D. NEGUS



Have the largest and finest stock of Nautical Instruments and Charts in the United States.

Estimates given for

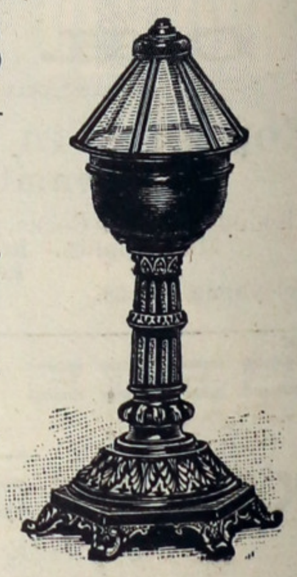
Outfits of Steamers and Pleasure Yachts.

Compass Adjusters.

Send for Catalogue and Almanac.

140 Water Street, New York City.

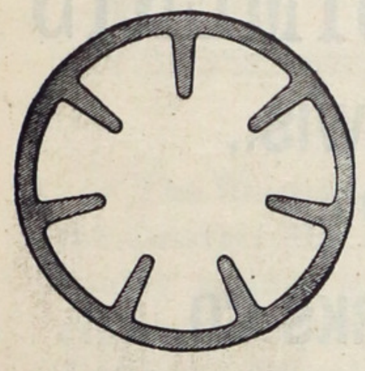
☞Every attention given to Trade orders.



S. F. HODGE & CO.

MARINE ENGINES,
PROPELLER WHEELS,
DECK HOISTERS,
MARINE REPAIRS.

320 ATWATER STREET,
DETROIT, MICH.

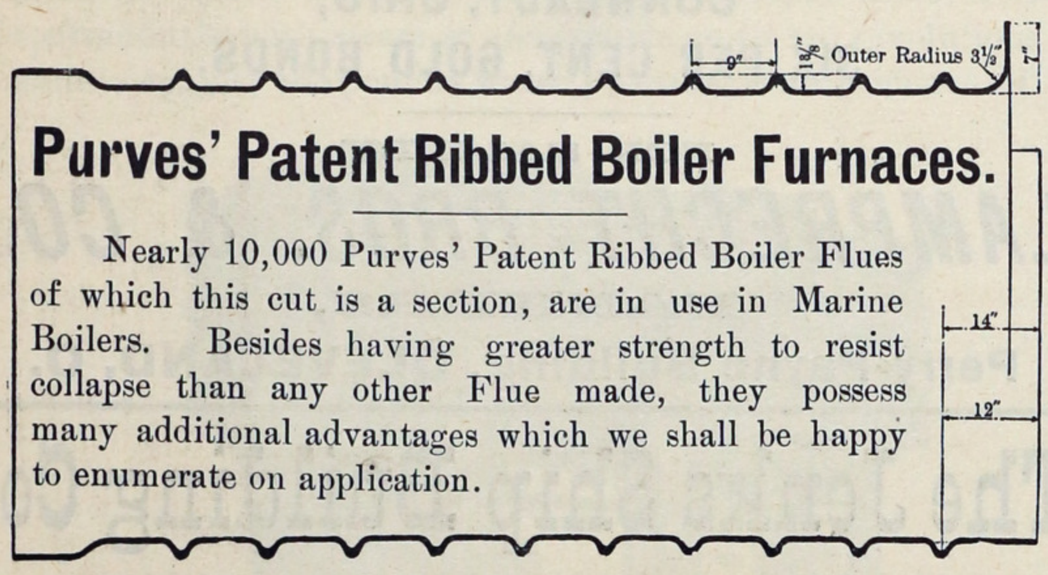


Serve's Patent Ribbed Boiler and Stay Tubes

Show an average economy in fuel of 15 per cent. In steamers, this means not only so much saving in cost of coal, but additional freight capacity.

☞Serves' tubes are cleaned as easily as plain tubes with the Baldwin Vacuum Tube Cleaner, and it cleans plain tubes better than all other cleaners.

Full particulars on application.



Purves' Patent Ribbed Boiler Furnaces.

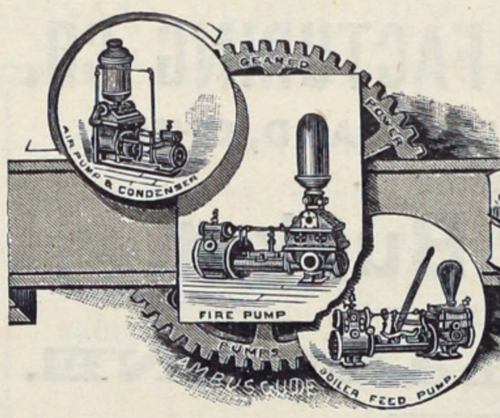
Nearly 10,000 Purves' Patent Ribbed Boiler Flues of which this cut is a section, are in use in Marine Boilers. Besides having greater strength to resist collapse than any other Flue made, they possess many additional advantages which we shall be happy to enumerate on application.

These flues may be ordered 1-16 of an inch lighter than any other flue made to pass U. S. Government inspection and to resist the same pressures.

CHARLES W. WHITNEY,

Representing Messrs. JOHN WILLIAMS & Co., Liverpool, Sole Agent for the United States and Canada.

81 & 83 FULTON STREET, NEW YORK.



KNOWLES Steam Pump Works.

93 Liberty St. NEW YORK. | 113 Federal St. BOSTON.

IMPROVED PUMPING MACHINERY For Every Class of Work. | Send for New Illustrated CATALOGUE

MANISTEE IRON WORKS CO.

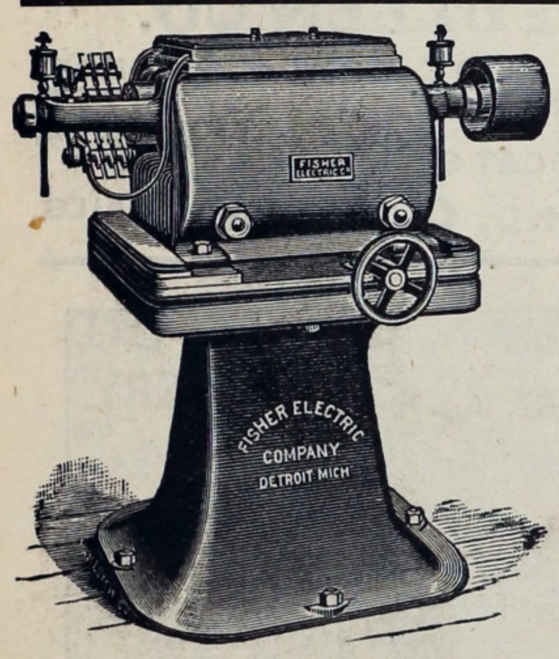
Manistee, Mich.,

MANUFACTURERS OF

Marine and Stationary Engines and Boilers.

Triple Expansion, Fore and Aft, and Steeple Compound Engines, and High Pressure Engines,

General Mill Machinery and Salt Well Outfits.



THE INCANDESCENT LIGHT

Is the only safe means of illuminating Passenger, Freight or Excursion Steamers. All other illuminants are dangerous. The Fisher system is Automatic in its operation, perfect in every detail, and does not require a skilled expert.

FISHER ELECTRIC CO.

183, 185 & 187 Larned St., DETROIT, MICH.

"The man whoknows so much about his profession that he cannot learn something about it by reading and study, has a very small profession or a very large cranium."

Marine and Mechanical Literature and Periodicals.

	Per Year.
Nautical Dictionary, (Patterson)	$ 5 00
Nautical Dictionary and Marine Review	6 00
Scotts' Coast Pilot, (1891 Edition)	2 00
Scotts' Coast Pilot and Marine Review	3 00
Engineering, (London), Weekly	10 00
Engineering, (London), Weekly and Marine Review	10 00
The Engineer, (London), Weekly	10 00
The Engineer, (London), Weekly and Marine Review	10 00
The Engineer, (New York), Semi Monthly	2 00
The Engineer, (New York), and Marine Review	3 80
Engineering, (New York), Monthly Magazine	3 00
Engineering, (New York) and Marine Review	4 00
Emerson Binder, (that will hold 52 Nos. of the Marine Review)	75

All marine, scientific, mechanical or trade publications furnished to subscribers of the MARINE REVIEW at *25 Per Cent. less* than subscription rates.

WESTERN OFFICE,
210 So. Water St.,
CHICAGO, ILL.

MARINE REVIEW,
510 Perry-Payne Bldg., CLEVELAND, O.

KING IRON BRIDGE & MFG. CO.,

CLEVELAND, O.,

Iron and Steel Bridges, Girders, Buildings and Structural Work of all kinds, Hoisting and Conveying Machinery for Handling Ore, Coal, &c.

B. D. BABCOCK, President. W. E. LUDLOW, Vice-Pres. & Gen. Mgr.
W. R. HUNTINGTON, Sec'y & Treas.

THE LUDLOW MANUFACTURING CO.

Office, 121 Superior St., Room 12, CLEVELAND, OHIO,

MANUFACTURERS OF

The Ludlow Bucket,

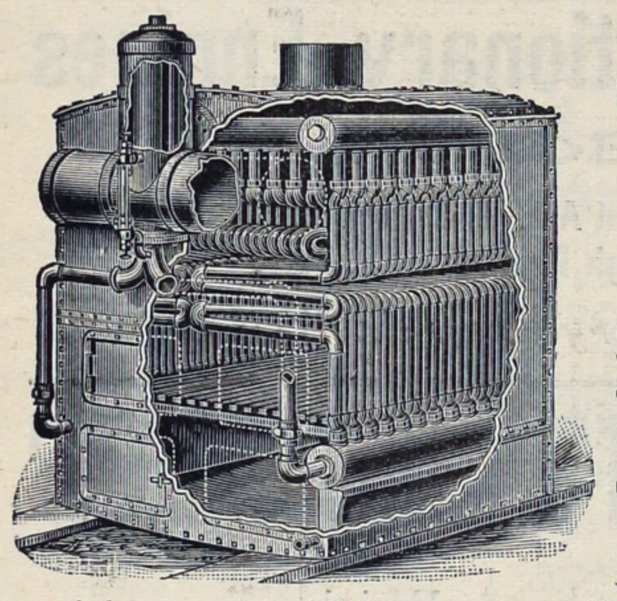
FOR THE HANDLING OF

COAL, ORE, and STONE.

CLEVELAND, O., Nov. 18, 1891.

TO WHOM IT MAY CONCERN :—We have had four of the one and one-half ton and four of the two-ton Ludlow Buckets in use on our coal docks since July 5, 1891, and have had no repairs whatever to make on them, with the exception of replacing one defective stem. The Buckets do the work to our entire satisfaction, and when used in connection with the Ludlow Patent Trip, which has been in use on one of our derricks for the past six weeks, they are, in our opinion, away ahead of any other coal buckets we have ever seen used.

J. S. ASHLEY, Agent,
New York and Cleveland Gas Coal Co.



ALMY'S PATENT SECTIONAL WATER TUBE BOILERS

FOR

:: MARINE and :: STATIONARY WORK

Manufactured by

ALMY WATER TUBE BOILER CO.
Providence, R.I.

"The use of boilers of the coil type in vessels of small displacement and enormously large power is already a necessity, and it will not be many years before their use will be general in all steam vessels."—Engineer-in-Chief Melville, U. S. N.

OMAR D. CONGER. CHILION P. CONGER.

Conger & Conger, Attorneys and Counsellors at Law,

No. 45 Corcoran Building, Washington, D. C.

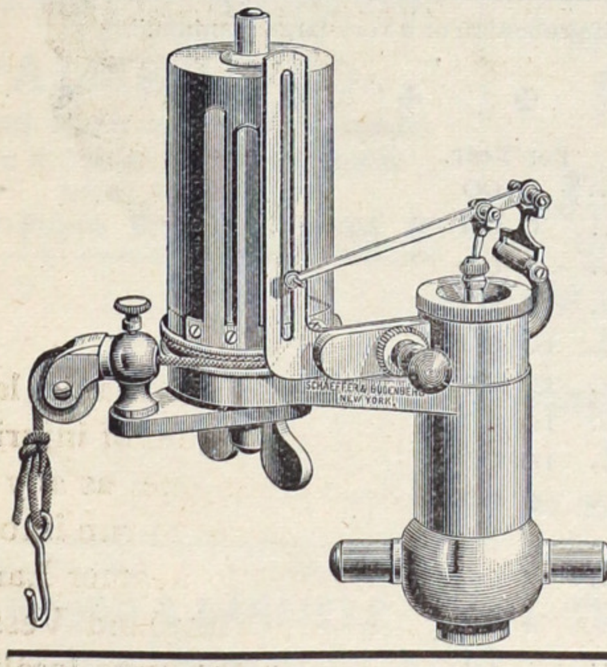
We make a specialty of all Marine and Shipping Business before the Treasury Department and Congress. Patent Business. Practice, Court of Claims and U. S. Supreme Court.

PATENTS

Patents Obtained in the UNITED STATES and FOREIGN COUNTRIES.

M. D. & L. L. **LEGGETT**

Attorneys at Patent Law,
Masonic Temple, **CLEVELAND, OHIO.**



Insurance Co. of North America.

INCORPORATED 1794.

LAKE MARINE DEPARTMENT,

GEO. L. McCURDY, Manager, Chicago, Ill.

CHARLES PLATT, President. WILLIAM A. PLATT, Vice-President.
EUGENE L. ELLISON, 2d Vice-Pres't. GREVILLE E. FRYER, Sec'y & Treas.
JOHN H. ATWOOD, Assistant Secretary.

Capital, paid up in cash..... $3,000 000.00
Assets..... 8,951,518.83

FIRST-CLASS INVESTMENTS

CITY OF SUPERIOR, WIS.,

SIX PER CENT. BONDS.

CONNEAUT WATER WORKS CO.,

CONNEAUT, OHIO,

SIX PER CENT. GOLD BONDS.

FOR SALE BY

LAMPRECHT BROS. & CO.,

BANKERS,

Perry-Payne Building, CLEVELAND, O.

The Jenks Ship Building Co.

GENERAL SHIP BUILDERS,

Correspondence Solicited. **PORT HURON. MICH.**

THE CONDIT-FULLER CO.

BAR IRON, SHEET IRON, PLATE IRON, PIG IRON,
BOILER RIVETS,
BOILER TUBES. PLATE STEEL,
GAS PIPE, BOAT SPIKES,
CLINCH RINGS, **CLEVELAND, O.** STEEL NAILS.

THE CANTON STEAM PUMP CO.
CANTON, O.
MANUFACTURERS OF
FOR BOILER FEEDING AND GENERAL PURPOSES.
THE MILLER DUPLEX PUMPING MACHINERY.
NEW DESIGNS AND IMPROVEMENTS.
WRITE FOR CATALOGUE AND DISCOUNTS.

MAGNESIA STEAM PIPE and BOILER COVERING.

IS ON NEARLY
300
STEAM VESSELS.

∴ SECTIONAL, BLOCK and PLASTIC FORM. ∴

Address, **MACAN & CO.,** 237 Bank Street, CLEVELAND, OHIO.